Mao Declaration

Exhibit 93

Redacted Version of Document
Sought to Be Sealed

Zervas Transcript

1   UNITED STATES DISTRICT COURT

2 NORTHERN DISTRICT OF CALIFORNIA, OAKLAND DIVISION

   _____

3 CHASOM BROWN, WILLIAM BYATT,)

4 JEREMY DAVIS, CHRISTOPHER   )

5 CASTILLO, and MONIQUE   )

6 TRUJILLO, individually and   )

7 on behalf of all other   )

8 similarly situated,   )

9   Plaintiffs,   ) Case No.

10   vs.   ) 4:20-cv-03664-YGR-SVK

11 GOOGLE LLC,   )

12   Defendant.   )

   _____)

13

14   ** CONFIDENTIAL **

15

16   REMOTE VIDEOTAPED DEPOSITION OF

17   GEORGIOS ZERVAS, Ph.D.

18   Monday, August 22, 2022

19   Volume I

20

21 Reported by:

22 NADIA NEWHART, CSR No. 8714

23 Job No. 5344594

24

25 PAGES 1 - 191

                              Page 1

1   UNITED STATES DISTRICT COURT

2   NORTHERN DISTRICT OF CALIFORNIA, OAKLAND DIVISION

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10   vs.   ) 4:20-cv-03664-YGR-SVK

11   GOOGLE LLC,   )

12   Defendant.   )

      _____)

13

14

15   Remote videotaped deposition of

16   GEORGIOS ZERVAS, Ph.D., Volume I, taken on behalf of

17   Plaintiffs, with all participants appearing remotely

18   via videoconference and the witness testifying from

19   Boston, Massachusetts, beginning at 10:05 a.m. and

20   ending at 3:41 p.m. on Monday, August 22, 2022,

21   before NADIA NEWHART, Certified Shorthand Reporter

22   No. 8714.

23

24

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1      APPEARANCES:

2

3    For Plaintiffs:

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21

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23

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 1    APPEARANCES (Continued):

 2

 3    For Calhoun Plaintiffs:

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12    For Defendant:

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20

21

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23

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1   APPEARANCES (Continued):

2

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11

12   Also Present:

13   MIHRAN YENIKOMSHIAN, Analysis Group

14   TONY NOKES, Videographer

15   (Remote appearance.)

16

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 1                              INDEX

 2      WITNESS                                     EXAMINATION

 3      GEORGIOS ZERVAS, Ph.D.

 4      Volume I

 5                      BY MR. McGEE                          9

 6

 7                          EXHIBITS

 8      NUMBER              DESCRIPTION                    PAGE

 9      Exhibit 1    Expert Report of Georgios Zervas,    17

10                   Ph.D., April 15, 2022; 211 pages

11

12      Exhibit 2    Expert Rebuttal Report of            17

13                   Georgios Zervas, Ph.D., June 7,

14                   2022; 115 pages

15

16      Exhibit 3    Fax Transmission sheet dated         50

17                   5/20/22 and Order on Plaintiffs'

18                   Motion for Sanctions for

19                   Discovery Misconduct; 58 pages

20

21      Exhibit 4    URL exemplar; 1 page                121

22

23      Exhibit 5    Document entitled "Zwieback:        127

24                   ███████████ ";

25                   GOOG-CABR-03664108-117
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1                    Monday, August 22, 2022

2                         10:05 a.m.

3

4         THE VIDEOGRAPHER:  Good morning.  We are

5    going on the record at 10:05 a.m. on August 22,        10:05:31

6    2022.  Please note that this deposition is being

7    conducted virtually.  Quality of recording depends

8    on the quality of camera and Internet connection of

9    participants.  What is seen from the witness and

10   heard on screen is what will be recorded.  Audio-      10:05:50

11   and video-recording will continue to take place

12   unless all parties agree to go off the record.

13         This is media unit 1 of the video-recorded

14   deposition of Dr. Georgios Zervas, Ph.D., taken by

15   counsel for plaintiff in the matter of Chasom Brown,   10:06:14

16   et al. and on behalf of others -- of themselves and

17   all others similarly situated versus Google, LLC,

18   filed in the United States District Court for the

19   Northern District of California, Oakland Division,

20   case number 4:20-cv-03664-YGR-SVK.  This deposition    10:06:44

21   is being conducted remotely using virtual

22   technology.  The witness is appearing from Boston,

23   Massachusetts.

24         We are -- my name is Tony Nokes.  I am the

25   videographer.  The court reporter is Nadia Newhart.    10:07:00
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1	We are here from the firm Veritext Legal Solutions.	
2	I am not related to any party in this action, nor am	
3	I financially interested in the outcome. If there	
4	are any objections to proceeding, please state them	
5	at the time of your appearance.	10:07:16
6	Counsel and all other present including	
7	remotely will now state their appearance and	
8	affiliations for the record, beginning with the	
9	noticing attorney.	
10	MR. McGEE: Good morning. This is Ryan McGee	10:07:27
11	with the law firm of Morgan & Morgan on behalf of	
12	plaintiffs. I'm joined by my colleague John	
13	Yanchunis also of Morgan & Morgan and Mr. Mark Mao	
14	of the firm Boies, Schiller, Flexner, LLP.	
15	Also with us is Angelica Ornelas, who is	10:07:46
16	counsel for the Calhoun plaintiffs, a related matter	
17	in this case.	
18	MR. WATKINS: Good morning. My name is Brett	
19	Watkins. I'm with the law firm of Quinn Emanuel on	
20	behalf of Google. With me is Dr. Josef Ansorge,	10:08:04
21	also with Quinn Emanuel. And joining us, also, is	
22	Mihran Yenikomshian with Analysis Group.	
23	THE VIDEOGRAPHER: Thank you. We may	
24	proceed.	
25	Will the court reporter please swear in the	10:08:20

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 1    witness.

 2           THE REPORTER:  Please raise your right hand.

 3

 4              GEORGIOS ZERVAS, Ph.D.,

 5    having been administered an oath, was examined and

 6    testified as follows:

 7

 8                   EXAMINATION

 9    BY MR. McGEE:

10      Q   Good morning.  Would you please state your      10:08:36

11    name.

12      A   Good morning.  My name is Georgios Zervas.

13      Q   And, Dr. Zervas, do you understand that you

14    are under oath today?

15      A   I do, Mr. McGee.                                10:08:48

16      Q   And is there any reason that you cannot

17    testify truthfully here today?

18      A   No, there is no such reason.

19      Q   All right.  Are you under the influence of

20    any medications?                                      10:09:00

21      A   I am not.

22      Q   Under the influence of any substances that

23    might impair your ability to recall information?

24      A   I am not.

25      Q   And if my questions are unclear, would you      10:09:10
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 1    please let me know?

 2        A   I will.  Thank you.

 3        Q   Is Google's counsel representing you for this

 4    deposition?

 5        A   Yes.  Mr. Watkins.                              10:09:22

 6        Q   And do you know who -- or do you know what

 7    the Analysis Group is?

 8        A   I do.

 9        Q   And what's your understanding of what the

10    Analysis Group is?                                      10:09:34

11        A   It's an economic consulting firm that

12    sometimes does litigation consulting.

13        Q   Okay.  And do you have any relationship with

14    the Analysis Group?

15        A   Yes.  They work under my guidance to perform   10:09:45

16    this work.

17        Q   And when you say "this work," are you talking

18    about the work that you performed for this

19    litigation?

20        A   I mean the two reports that we're here to      10:10:00

21    discuss today.  So they worked under my direction to

22    complete certain tasks related to these reports.

23        Q   Okay.  And who (technical difficulty) --

24            THE REPORTER:  Excuse me.  Oh, I think Mr. --

25    I'm sorry.                                              10:10:13
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1	We -- did you just say "and who"?
2	MR. McGEE: Sorry, I did, but there was an
3	echo. I'm not sure if other microphones are on.
4	THE REPORTER: Mine's on. I'll turn mine
5	off. Thank you.
6	MR. McGEE: It's okay. Just let us know,
7	Madam Court Reporter. My -- my mother's a retired
8	court reporter, so I'll try not to commit any of the
9	sins of a deposition. And, you know, please just
10	let us know.
11	THE REPORTER: Thank you.
12	BY MR. McGEE:
13	Q And, Dr. Zervas, where are you at right now?
14	A I'm at my home office in Brookline,
15	Massachusetts.
16	Q And is there anyone in there -- in the room
17	with you today?
18	A No. I'm alone.
19	Q Do you have any documents with you for this
20	deposition?
21	A Yes, I do.
22	Q And what documents are those?
23	A I have a printed copy of my expert report,
24	and I have a printed copy of my rebuttal report.
25	These are the two documents that I have with me.

Timestamps:
- 10:10:38 (line 5)
- 10:10:47 (line 10)
- 10:10:58 (line 15)
- 10:11:08 (line 20)
- 10:11:24 (line 25)

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1   Q   Do those have any markings on them?

2   A   Yes. They have -- not markings. The only

3   difference compared to what you might have received

4   is those tabs that allow me to easily navigate to

5   different sections like Appendix A or exhibits but   10:11:39

6   nothing else.

7   Q   Okay. So no annotations or other additions

8   to those reports that we received from your counsel,

9   correct?

10   A   Nothing of that sort. Only the tabs that   10:11:53

11   allow me easy navigation.

12   Q   And on your computer screen right now, what

13   windows do you have open?

14   A   I have Zoom, and I have Exhibit Share.

15   Q   Do you have any email clients open at this   10:12:15

16   time?

17   A   No, I do not.

18   Q   Do you have any chat programs open at this

19   time?

20   A   No, I do not.   10:12:27

21   Q   And do you have your phone with you here

22   today?

23   A   Not on my person. It's in the same room, but

24   not within reach.

25   Q   Okay. So due to COVID and remote   10:12:33

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 1    depositions, it's still a protocol that we're all

 2    trying to figure out.  But what I'm getting at is,

 3    during your deposition here today, I just ask that

 4    you have no chat programs or -- or anything else

 5    open that you wouldn't normally have in a deposition   10:12:52

 6    in real life if we were in the same room.

 7         Is that fair, Mr. -- or excuse me,

 8    Dr. Zervas?

 9      A   That's absolutely fair.  I understand what

10    you're saying.  Even though I have never done a        10:13:04

11    deposition in person, I imagine how this would go.

12      Q   Understood.  And what have you done to

13    prepare for today's deposition?

14      A   A few things.  Primarily, I went back and

15    read both my initial report and my rebuttal report.    10:13:15

16    I read some documents that I cite therein, and then

17    I also did some practice sessions with counsel to

18    prepare for this deposition.

19      Q   In preparation for your deposition, were any

20    memoranda or other written materials provided for      10:13:34

21    you from counsel?

22      A   No.  Counsel did not provide me any memoranda

23    or written materials.

24      Q   So you don't have any fact sheets or one-

25    pagers that would summarize your opinions or -- or     10:13:56
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1   anything else?

2   A   No, I do not have any one-pagers or other

3   short documents like that that summarize my

4   opinions.

5   Q   Okay. And approximately how much time did   10:14:04

6   you spend preparing for today's deposition?

7   A   Including the time that I used to produce my

8   reports or just subsequent to the production of the

9   reports and their filing?

10   Q   Subsequent to the production of the reports.   10:14:19

11   So since June 7th of 2022.

12   A   I would say roughly maybe -- let's call it

13   40 hours, but, you know, give me plus or minus five.

14   Q   I will give you plus or minus five,

15   Dr. Zervas.   10:14:39

16   A   Thank you.

17   Q   What documents did you review in preparation

18   for today's deposition?

19   A   As I mentioned, the two primary sources I

20   consulted are my two reports and then certain   10:14:50

21   citations within. I also reviewed some documents

22   that I provided -- that I provided to you as part of

23   my backup production.

24   Q   I'm sorry. What do you mean by your backup

25   production?   10:15:08

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1   A   Oh, for instance, certain videos of tests

2   that I conducted. This might be the wrong

3   terminology, "backup production," but certain things

4   that I might have -- that I have provided to you

5   that might not be within the report but tests that I   10:15:23

6   did, experiments that I ran, you know, datasets that

7   I produced and so on and so forth.

8   Q   Okay. So let me ask it this way, then.

9   Is there anything that you reviewed in

10   preparation for your deposition here today that is   10:15:39

11   not either included as an exhibit to your report or

12   cited in your report?

13   A   I had certain communications with the

14   Analysis Group throughout my -- you know, my work

15   period, but I don't recall exactly when I might have   10:16:09

16   reviewed these. I -- nothing -- nothing of

17   substance. That would be my answer to your

18   question.

19   Q   Okay. Did you rely on those communications

20   with the Analysis Group to form your opinions   10:16:23

21   reflected in the two reports that you've entered in

22   this case?

23   A   These communications were mostly because The

24   Analysis work -- Group worked under my direction.

25   In a sense, I had to tell them what to do, I had to   10:16:37

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 1    review some of the work that I did, provide

 2    feedback, in the same manner that I might work,

 3    let's say, with my grad students.

 4        Q    Were any attorneys parties to the

 5    communications between you and the Analysis Group?    10:16:53

 6        A    Not under my knowledge.  So these

 7    communications were between me and the Analysis

 8    Group to my knowledge.

 9        Q    Okay.  Have you included the substance of

10    those communications with the Analysis Group in your    10:17:07

11    report?

12        A    I have in the sense that those communications

13    were part of the work that I did to arrive at my

14    opinions.

15        Q    And who hired you for this case?    10:17:20

16        A    Google.

17        Q    And when were you hired?

18        A    You will have to give me a bit of wiggle room

19    here, as well.  But as I recall it, it was maybe the

20    beginning of the year.    10:17:36

21        Q    So in approximately January of 2022?

22        A    I don't have a perfect recollection, but I

23    think it was around that time.

24        Q    Okay.  And what were you hired to do?

25        A    So I was hired to produce those two reports    10:17:55
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1   and my assignments in each of the reports, they're

2   different. They're stated within the reports. I

3   would happy to go over them if you want me to in

4   more detail.

5   MR. McGEE: Sure. Let's start with what has   10:18:11

6   been marked as Exhibit 1. And it's on the file

7   share. You may have to refresh your screen for it

8   to be brought up, but I've put both of your reports

9   into the Exhibit Share. So Exhibit 1 will be your

10 opening report.   10:18:26

11   (Exhibit 1 was marked for identification

12   and is attached hereto.)

13   MR. McGEE: And Exhibit 2 will be your

14 rebuttal report.

15   (Exhibit 2 was marked for identification   10:18:32

16   and is attached hereto.)

17   MR. McGEE: And these are the unredacted

18 versions as they were served on us, not the filed

19 versions that are with the Court.

20   THE WITNESS: I am at Exhibit 1. I think   10:18:43

21 that's what you asked me to do.

22 BY MR. McGEE:

23   Q   Yes, sir. So I think you said with the

24 benefit of that, you can describe what you were

25 hired to do by Google?   10:18:50

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1   A   Yes, thank you, with the benefit of that or

2   my hard copy, which is identical.

3   Q   And -- and you're welcome to rely on your

4   hard copy if you're representing that the hard copy

5   is the same. You're also welcome to review the   10:19:02

6   exhibit that I've uploaded for you. I'm sure your

7   counsel may counsel you to do so.

8   But, Dr. Zervas, if you'd like to review it,

9   you can, or if you want to rely on the hard copy,

10   more than happy to do that. We've done that in   10:19:22

11   other depositions.

12   A   I appreciate the flexibility. Let me very

13   quickly scan the exhibit just to make sure that it's

14   identical to what I have here. That's all I want to

15   do. If you give me 30 seconds.   10:19:29

16   Q   Certainly.

17   A   Just let me make sure. Just go to the end

18   and make sure it includes everything. Let me look

19   at the last page.

20   Okay. So let's do them one by one so I can   10:19:47

21   look at Exhibit 1. From a quick scan, it appears to

22   be identical to my hard copy.

23   So now let me point you to page 8 of my

24   opening report. This outlines my assignment. And

25   in particular, as you can see, there are four   10:20:09

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1   complete tasks that I outline. The first one is --

2   was to describe how Internet communications and web

3   browsing work, how they operate.

4   The second task is about private browsing

5   modes and how these work, the different combinations   10:20:23

6   of browsers and operating systems.

7   My third task in this report was to talk

8   about Google's analytics and advertising products,

9   how they operate and what information they might

10   need in order to function.   10:20:40

11   And finally, I was also asked to discuss what

12   data is transmitted to Google when a user visits a

13   website that user's analytics -- Google Analytics

14   and advertising products in private browsing modes

15   and also how these transmissions can be impacted by   10:20:56

16   user and website -- webmaster settings.

17   Q   And, Dr. Zervas, who explained this

18   assignment to you for the opening report that's been

19   marked as Exhibit Number 1?

20   A   Can you clarify what you mean by explain?   10:21:14

21   Q   Who asked -- on page 8, paragraph 17(a)

22   through (d), how was this assignment either

23   communicated to you, or did you come up with the

24   assignment? I'm just trying to figure out how these

25   words got onto this page, so to speak.   10:21:39

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1   A   I understand. The assignment was

2   communicated to me by counsel.

3   Q   And did the assignment ever change between

4   your retention in approximately January of 2020 and

5   authoring this report in April 15th of 2022?   10:21:57

6   A   No. I do not recall any instances of my

7   assignment changing in the period you specified.

8   Q   Okay. And other than this -- the work for

9   this lawsuit, have you ever done any other work for

10 Quinn Emanuel?   10:22:13

11   A   I have.

12   Q   And what work was that?

13   A   For the Calhoun case.

14   Q   And aside from this work and the Calhoun

15 work, have you performed any work for the law firm   10:22:28

16 of Quinn Emanuel?

17   A   No.

18   Q   And aside from this case and the Calhoun

19 case, have you performed any other work for Google?

20   A   I have.   10:22:38

21   Q   And what work is that, Dr. Zervas?

22   A   That would be for a different case. Yes,

23 that would be for a third case with a different law

24 firm.

25   Q   Is that case currently in litigation?   10:22:54

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1   A   This case is currently in litigation, yes.

2   Q   Do you know if you have been disclosed as an

3   expert in that case?

4   A   I am not sure about these procedural aspects,

5   Mr. McGee. I'm not sure I know how to answer this   10:23:13

6   question. Disclosed to whom? To the public? I'm

7   not sure. So the answer is, I do not know.

8   Q   Okay. Dr. Zervas, are you able to share with

9   me the name of the case that you have been retained

10   by Google in? And if you would like to take a break   10:23:27

11   with your counsel to confirm whether you're

12   permitted to share that, I do not mind taking that

13   break.

14   MR. WATKINS: He's --

15   THE WITNESS: I appreciate --   10:23:38

16   MR. WATKINS: Sorry. Just to interject, it's

17   okay to share the name of the case, Dr. Zervas.

18   THE WITNESS: Thank you, Mr. Watkins. I was

19   going to confirm, but...

20   So it's -- I don't want to get this wrong,   10:23:48

21   but I believe it's State of Arizona versus Google

22   LLC.

23   BY MR. McGEE:

24   Q   Is that a location tracking case, Dr. Zervas?

25   A   It's about location. I don't know that I   10:24:03

Page 21

1   would describe it necessarily as location tracking.

2   Q   Do you know if a function by the common term

3   web and app activity is at issue in that case?

4   A   Web and app activity, as I recall it, appears

5   in the context of that case.   10:24:28

6   Q   And have you ever received any funding from

7   Google?

8   A   I have.

9   Q   And would you please describe that, sir.

10   A   Yes. If you don't mind, I will go back to my   10:24:44

11   CV, because it's stated there, I believe.

12   Q   Sure.

13   A   Let me make sure that -- because it was a

14   while ago. So if you look at page A-5, Appendix A,

15   page 5, my CV under "Grants, Awards, & Honors,"   10:25:05

16   item 5 is a Google Faculty Research Award, which is

17   a $35,000 unrestricted gift, plus $10,000 in Google

18   Cloud credits that I received in 2015. The Google

19   Cloud credits have expired at this point, so I don't

20   have access to them.   10:25:26

21   Q   Okay. And was that gift -- I see that it's a

22   Google faculty research award. So was that provided

23   to you in your capacity as a professor, or was it

24   provided in another capacity?

25   A   In my capacity as a professor with the   10:25:43

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1   intention of supporting my research.

2   Q   Any other grants or money that you've

3   received from Google since then?

4   A   Apart from being paid, compensated for -- for

5   my work on the cases that we discussed, no.   10:26:05

6   Q   And how much are you being compensated for

7   your work in this case?

8   A   My hourly rate is $700.

9   Q   And approximately how many hours have you

10   personally spent on this litigation thus far?   10:26:18

11   A   Let's call it a hundred hours, plus/minus

12   five.

13   Q   So between your two reports, you spent

14   approximately 60 hours, and then you've spent

15   approximately 40 hours preparing for your deposition 10:26:36

16   here today?

17   A   Roughly speaking, yes.

18   Q   Have you received any other compensation

19   other than litigation which might include

20   honorariums, support for research or support for any 10:26:56

21   conferences or seminars from Google?

22   A   I recall giving a seminar at Google a long

23   time ago. Probably I can find it in my

24   presentations and invited talks. And as is common

25   in this case, I believe they refunded part of my   10:27:22

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1   travel expenses. That's the only -- the closest I

2   can think of to answer your question.

3   Q   Okay, Dr. Zervas. So any substantial amount

4   of funding or monies that you've received from

5   Google would be the $35,000 grant in 2015 plus the   10:27:35

6    $10,000 cloud credit and then the money for your

7   work in this case and then your money for the work

8   in the Calhoun case. Is that a fair representation?

9   A   And the money for the work in the State of

10   Arizona case. That would also count, I think, as a   10:27:54

11   substantial amount by the standards you have set.

12   Q   Thank you for that.

13   If you know, how much time has been spent

14   under your direction preparing the expert reports in

15   this case that you've offered?   10:28:15

16   MR. WATKINS: Objection; vague.

17   BY MR. McGEE:

18   Q   And if I can explain that, Dr. Zervas, you

19   say that you yourself have spent 60 hours preparing

20   the reports. I'm wondering if you know how much   10:28:26

21   time the Analysis Group and anyone else at your

22   direction has spent in addition to those 60 hours.

23   A   I did not keep track of the hours the

24   consultants at the Analysis Group spent.

25   Q   Did you ever ask for that information?   10:28:45

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1   A   No. It was not necessary for my accounting.

2   Q   And, Dr. Zervas, did you work with anyone at

3   Google to prepare your reports?

4   A   No.

5   Q   Did you work with anyone at Quinn Emanuel to   10:29:14

6   prepare your reports?

7   A   For instance, when we did prep sessions for

8   this depo, Mr. Watkins was there, so I presume that

9   counts as work with Quinn Emanuel.

10   Q   Okay. And if you look at Exhibit Number 1,   10:29:33

11   which is your opening report, does this report

12   contain all of your opinions?

13   A   It contains all of my opinions, though as I

14   state in my report, should additional information

15   become available to me, I might revise those   10:29:48

16   opinions. But based on the information I had access

17   to at the time I submitted my report, this is my

18   complete set of opinions.

19   Q   And at the time that you submitted the report

20   on April 15th of 2022, did it contain all of the   10:29:59

21   bases for your opinions reflected in that report?

22   A   Yes. I think my opinions are well supported.

23   Q   And for what's been marked as Exhibit

24   Number 2, you've got that. That's your rebuttal

25   report. And I know you have the hard copy with you.   10:30:20

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1   If you want to take a chance to skim or review

2   what's been uploaded as Exhibit Number 2 into the

3   Exhibit Share, please do, and let me know when

4   you're finished.

5   A   I appreciate that. Thank you. Let me   10:30:33

6   quickly scroll.

7   It appears to be identical to my copy.

8   Q   Okay. And does -- what's been marked as

9   Exhibit 2, does that contain all of your rebuttal --

10   or does your rebuttal report contain all of your   10:31:05

11   opinions in this case along with what's been marked

12   as Exhibit 1 in your opening report?

13   A   Well, no. My rebuttal report does not

14   contain all of my opinions in this case.

15   Q   I --   10:31:20

16   (Simultaneous speaking - unreportable.)

17   THE WITNESS: Sorry. Go --

18   BY MR. McGEE:

19   Q   That's fair. That's a poor way of asking

20   that question.   10:31:27

21   Does your rebuttal report contain all of your

22   subsequent opinions in this case that were not

23   otherwise reflected in your opening report?

24   A   It does, again, subject to the same

25   disclaimer that should additional information become   10:31:40

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1	available to me, I might revise my opinions.
2	Q Okay. And same question. Does it contain
3	all of the bases for your opinions?
4	A Yes. Again, my opinions are well supported.
5	The basis is in there. 10:32:00
6	Q Okay. And to reach the conclusions that you
7	provided in these two reports, did you rely on any
8	other materials not reflected in those reports?
9	A Sometimes -- for instance -- I will give you
10	an example to make that concrete -- I cite certain 10:32:14
11	depositions in my reports. Typically, depositions
12	come with exhibits just like my deposition. I may
13	have reviewed -- I -- I have reviewed certain
14	exhibits cited within those depositions, but the
15	exhibits themselves are not necessarily line items 10:32:31
16	in my list of materials considered.
17	Q Okay. And we'll get to that. But in your
18	report, I believe there's one instance where you
19	cite the deposition testimony of Dr. Glenn Berntson,
20	and you give the line item that you're citing. 10:32:49
21	But are there exhibits that you reviewed in
22	the depositions of these individual Google employees
23	that you relied on but you did not specifically cite
24	in your report?
25	MR. WATKINS: Objection; asked and answered. 10:33:04

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1   THE WITNESS: If these were central as a

2   basis for my opinions, then they would appear in my

3   list of materials considered.

4   BY MR. McGEE:

5   Q   And aside from the Analysis Group, did anyone   10:33:23

6   else help you with the testing that is reflected in

7   your opening report?

8   A   Nobody else helped me apart from the Analysis

9   Group for the testing that is part of my initial

10   report.   10:33:39

11   Q   Are you aware of whether the Analysis Group

12   utilized the services of anyone else to assist with

13   the testing that you assigned to them?

14   A   I am not aware of them using a third party,

15   but it's not an explicit question that I asked.   10:33:54

16   Q   And why not?

17   A   It -- I did -- I did not need to ask that

18   question. My understanding was that the Analysis

19   Group performed that work.

20   Q   And why was it not necessary for you to ask   10:34:11

21   that question, Dr. Zervas?

22   MR. WATKINS: Objection; asked and answered.

23   THE WITNESS: It wouldn't change my opinions

24   or the bases of my opinions in one way or the other.

25   What I cared about in my interactions with the   10:34:29

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1   Analysis Group was that they performed the work as I

2   specified, to certain quality standards that I

3   expect, that they took my feedback, I directed on

4   what we did until we arrived at the product that I

5   am satisfied with that I feel provides support for   10:34:46

6   the opinions in those two reports.

7   BY MR. McGEE:

8   Q   Okay, Dr. Zervas. But if the Analysis Group

9   relied on any representations from third parties to

10   perform the work that you were ultimately reviewing,   10:35:04

11   are you saying that those representations are not

12   important to you for your ultimate opinions?

13   MR. WATKINS: Objection; assumes facts not in

14   evidence.

15   THE WITNESS: Can you please explain to me   10:35:20

16   what representations are and how they're used? I'm

17   not -- I think it's a legal term, and I don't quite

18   understand it.

19   BY MR. McGEE:

20   Q   Understood. So the way I understand the work   10:35:28

21   to go is you're supervising the Analysis Group, you

22   give them sets of tasks or responsibilities and you

23   expect them to execute them and report back to you.

24   Is that a fair representation of how you were using

25   the Analysis Group to support the two reports that   10:35:51

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1   you authored in this case?

2   A   Yes, Mr. McGee, it's a fair representation.

3   Q   So if the Analysis Group spoke with someone

4   at Google to further understand any of the technical

5   issues that they might encounter during that testing   10:36:05

6   and that person at Google further instructed them,

7   would that affect the workflow that you had assigned

8   to the Analysis Group?

9   MR. WATKINS: Same objection. Assumes facts

10   not in evidence.   10:36:30

11   THE WITNESS: Absolutely not, because I

12   designed the workflow and neither the Analysis Group

13   nor anyone else came back to me to say that this

14   workflow should change in this or that manner.

15   So I think your hypothetical assumes that a   10:36:43

16   third party told the Analysis Group that the

17   workflow should be different. But given that I

18   designed the workflow, obviously, it isn't -- did

19   not happen that particular thing, that hypothetical

20   that you described.   10:37:00

21   BY MR. McGEE:

22   Q   Okay. But ultimately, as you sit here today,

23   you can't tell me whether the Analysis Group

24   consulted with any third parties to accomplish the

25   responsibilities that you delegated to them in   10:37:11

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 1    support of your two reports; is that correct?
 2       A    What I can tell you --
 3            MR. WATKINS:  Objection --
 4            Sorry, Dr. Zervas.
 5            I'll say objection; vague and asked and        10:37:22
 6    answered.
 7            Go ahead.
 8            THE WITNESS:  Thank you.
 9            So you asked me a couple of things, first
10    about specific Google employees, and then you asked    10:37:34
11    me about, broadly speaking, any third parties that
12    I -- I don't know what they might be.  You know,
13    like I'm a visitor at Microsoft.  I'm a consultant
14    there.  Maybe the Analysis Group gets someone who
15    works as a contractor.  That's why I hesitated to      10:37:54
16    answer your question.
17            But in terms of the substance of your
18    question, with respect of -- to the design of my
19    testing, I came up with that.  I provided the
20    feedback.  They worked fully under my direction.       10:38:08
21    BY MR. McGEE:
22       Q    Okay.  And I -- I have to ask the question
23    the way I'm asking it because I don't get to depose
24    the Analysis Group today; I get to depose you.
25       A    I understand.                                  10:38:21
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1   Q   So -- and if we go to Schedule C of

2   Exhibit 1.

3   A   You mean my assignment, Mr. McGee, C?

4   Q   I'm sorry. Appendix C, Schedule C. I'm

5   sorry.   10:38:52

6   A   Different terminology. Okay. Yes.

7   Q   Appendix C is -- is what you've labeled it.

8   My apologies.

9   A   No problem.

10   Q   These are the materials that you considered   10:39:03

11 for your opening report, correct?

12   A   Correct.

13   Q   And you reviewed the depositions of

14 AbdelKarim Mardini?

15   A   I did.   10:39:13

16   Q   The deposition of Glenn Berntson?

17   A   Yes.

18   Q   Sorry. It's -- I know we're on video and

19 that you want to nod, but you have to give verbal

20 responses. The court reporter can't take down nods   10:39:27

21 or shakes of the head or anything else. So --

22   A   My apologies. I should have known that. I

23 got carried away.

24   Q   It's okay.

25   You've also reviewed two depositions from   10:39:39

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1   Chris Liao?

2   A   Yes.

3   Q   You reviewed the deposition of Michael

4   Kleber?

5   A   Yes.   10:39:46

6   Q   The deposition of Rory McClelland?

7   A   Yes.

8   Q   The deposition of Stephen Chung?

9   A   Yes.

10   Q   The depositions of Steve Ganem?   10:39:52

11   A   Yes.

12   Q   And the deposition of Bert Leung, correct?

13   A   Correct.

14   Q   And you personally reviewed those

15 depositions, Dr. Zervas?   10:40:06

16   A   I did.

17   Q   And for the depositions of Chris Liao, what

18 in particular did you review that assisted with your

19 report today?

20   A   I would have to go back and see what I cite,   10:40:18

21 the deposition. So if you can give me a second --

22   Q   Sure.

23   A   -- I can scroll through my report.

24   Q   And I will say I did look through your

25 report, and I did not see his deposition cited   10:40:37

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 1    anywhere, so that's why -- that's why I asked.

 2        A    Oh.

 3        Q    Please do review your report.  I don't want

 4    to over represent my review of your report.

 5        A    You may be correct.  I would have to take a      10:42:46

 6    closer look.  But scanning through and without

 7    wanting to spend too much time reviewing every

 8    sentence here, I cannot find it.  I cannot locate it

 9    either, so I will take your word for it that the

10    citation might be missing.                              10:43:00

11        Q    Okay.  Well, I do appreciate your brevity,

12    Dr. Zervas.

13            Based on -- or as you sit here today, do you

14    recall what you reviewed from Chris Liao's

15    depositions that would have assisted with your         10:43:17

16    opening report?

17        A    No, I do not have that recollection sitting

18    here today.  It was a while ago that I reviewed

19    these documents.

20        Q    If you know, was Mr. Liao developing any       10:43:29

21    technologies that would assist Google with

22    identifying incognito or private browsing traffic?

23        A    This is not something that I looked at as

24    part of my assignment.  So the focus of my

25    assignment is communications between the Chrome        10:43:51
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1   browser in incognito and regular mode with Google

2   and how these data flows might change depending on

3   settings like incognito extensions, settings and so

4   on and so forth.

5   So what happens on the back end was not -- it   10:44:07

6   was outside the scope of my work. This is not

7   something I was looking at it for the purpose of my

8   report.

9   Q   Okay. So if I understand your testimony

10   correctly, your report did not perform any work on   10:44:18

11   what is done with the data after it leaves the

12   user's computer; is that correct?

13   MR. WATKINS: Objection; vague.

14   THE WITNESS: I think this is not technically

15   accurate, because literally, the data that I   10:44:37

16   captured for my analysis had left the user's

17   computer.

18   BY MR. McGEE:

19   Q   Okay. That's fair. Then the scope of your

20   analysis did nothing to analyze what happens to the   10:44:49

21   data once Google receives it; is that correct?

22   MR. WATKINS: Same objection.

23   THE WITNESS: My understanding of this case

24   is that the central question in this case is how

25   this -- what communications -- what data flows   10:45:06

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 1    happen between the Chrome browser and Google when

 2    the user is incognito or regular mode and visits

 3    websites that might use third-party services like

 4    analytics or advertising as I understand is in the

 5    complaint.                                          10:45:28

 6         And this is exactly what I looked at and, in

 7    particular, how certain identifiers might change and

 8    how certain cookie values might change between

 9    incognito and regular mode.

10         Now, I understand that there might be other    10:45:44

11    experts who are looking at this, let's call them

12    server-side issues that you are referring to, but

13    the scope of my report is exactly what I described

14    before.

15    BY MR. McGEE:                                       10:46:00

16       Q   Okay, Dr. Zervas.  Then -- so the answer to

17    my question of whether you analyzed any -- or

18    whether you analyzed how the data that Google

19    receives is analyzed is that you did not review

20    that, correct?                                      10:46:14

21         MR. WATKINS:  Objection; vague.

22         THE WITNESS:  I -- through my testing, I

23    documented what data Google receives, and I

24    performed certain analyses that are provided in my

25    exhibits.                                           10:46:33
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 1    BY MR. McGEE:

 2        Q    But, Dr. Zervas, you do not know what Google

 3    does with that data once it's received, correct?

 4        A    This is not fully true, because I also

 5    reviewed certain documents like the Google privacy    10:46:46

 6    policy, the documentation for analytics, the

 7    documentation for Google Ad Manager that, you know,

 8    described, for instance, certain policies and

 9    procedures regarding the use of data in the back

10    end.  So these are publicly disclosed by Google.      10:47:05

11        Q    So other than the public disclosures, you did

12    not review any internal documents from Google that

13    relate to how Google uses the data once it is

14    received, correct?

15            MR. WATKINS:  Objection; vague.               10:47:19

16            THE WITNESS:  Again, that's a very broad

17    question, so I have to be careful on how I answer.

18    But like I said, I reviewed depositions.  I reviewed

19    exhibits.  I might have come across, again, certain

20    policies and procedures, let's say, regarding          10:47:36

21    retention of data or things like that.  But these

22    were not needed as a basis for the opinions that I

23    offer in these two reports.

24    BY MR. McGEE:

25        Q    And those depositions were marked as          10:47:51
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1   confidential under the protective order, correct?

2   A   As far as I recall.

3   Q   You had to sign a protective order in order

4   to review those depositions that you just

5   referenced?   10:48:03

6   A   I did have to sign a protective order, yes,

7   as part of --

8   Q   In other words -- in other words, the

9   depositions were not readily available in some

10 public domain, correct? They were provided by   10:48:17

11 counsel and it had a confidentiality designation on

12 them?

13   A   Absolutely. My understanding was that these

14 are for my eyes only and I'm not allowed to discuss

15 this, you know, with third parties, outside counsel. 10:48:29

16   Q   Okay. Professor Zerva- -- or excuse me,

17 Dr. Zervas, do you know who Special Master Douglas

18 Brush is?

19   A   Through the work I have done in district

20 cases, I have come across the term "special master"   10:48:52

21 before, but the specific person that you have named,

22 I do not -- I do not know this person.

23   Q   And how did you come across any references to

24 the special master in this case?

25   MR. WATKINS: I'm going to object. And to   10:49:07

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 1    the extent this implicates communications with

 2    counsel, Dr. Zervas, I think that's subject to the

 3    parties' stipulation, and I'll ask you not to answer

 4    those questions.

 5         And to the extent, you know, it's                    10:49:23

 6    communications with counsel that you did not rely on

 7    for purposes of your opinions in your report, I'll

 8    ask you not to answer.

 9    BY MR. McGEE:

10      Q   So, Dr. Zervas, with that instruction from        10:49:34

11    counsel, can you answer my question without

12    divulging attorney-client privileged information or

13    privileged information?

14      A   With that in mind, would you be kind enough

15    to repeat your question so that I can be careful to     10:49:49

16    follow my counsel's advice?

17         MR. McGEE:  Sure.

18         Madam Court Reporter, would you mind reading

19    back my initial question, please.

20         (Record read as follows:

21           "Q:  And how did you come across

22           any references to the special master

23           in this case?")

24         THE WITNESS:  Thank you for repeating the

25    question.                                               10:50:13
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1   I do not believe that I said -- and if I did,

2   let me correct it -- that it was in the context of

3   this case. In the context of my various consulting

4   engagements, I think I have come across the term

5   "special master." And I came across it this week,   10:50:27

6   as well, in the news.

7   BY MR. McGEE:

8   Q   In this case, you saw something about the

9   special master in the news?

10   A   No, no, no, no, no. Just popular news   10:50:36

11   regarding the former president and something about

12   appointing a special master, so --

13   Q   I see.

14   (Simultaneous speaking - unreportable.)

15   BY MR. McGEE: 10:50:51

16   Q   I see. So in this case, the Brown versus

17   Google and then also in Calhoun versus Google, there

18   was a special master who was retained to oversee

19   some discovery disputes.

20   Did you review any documents from that   10:51:08

21   special master process?

22   A   No, I did not, not that I -- I do not know

23   what is contained in that special master process.

24   So if I reviewed something that also happens to be

25   part of that special master process, I did not   10:51:20

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1   review it as part of the special master process, if

2   that makes sense to you.

3   Q   Okay. Did you review any data that was

4   generated by the plaintiffs to form the opinions

5   that are reflected in your opening report?   10:51:37

6   A   Any datasets? No. I did not review any

7   datasets as such that we described, that fit that

8   description.

9   Q   Did you -- same question for your rebuttal

10 report. Did you review any data from the special   10:51:52

11 master process that the plaintiffs generated to form

12 the -- or as a basis for anything in your rebuttal

13 report?

14   MR. WATKINS: Objection; vague.

15   THE WITNESS: Again, understanding the broad   10:52:07

16 scope of my question, I would say broadly speaking,

17 no, I was not aware that at any point, I was

18 reviewing something that was part of this special

19 master process that you described.

20   But I would like to add that importantly, I   10:52:23

21 never felt the need to. I have substantial bases

22 for all the opinions I offer in my report. And as

23 we discussed before, I spent a significant amount of

24 time conducting experiments and the Analysis Group

25 working under my direction to create original   10:52:40

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 1   datasets, primary sources on which I relied to form

 2   the opinions that I offer in these two reports.

 3   BY MR. McGEE:

 4       Q    And all of the datasets that you generated

 5   with the assistance of the Analysis Group were          10:52:54

 6   external and did not involve any data from Google,

 7   correct?

 8       A    These datasets were generated as part of my

 9   own experiments that I conducted to form the bases

10   for the opinions I offer in these reports.             10:53:13

11          MR. McGEE:   Okay.  I think we've been going

12   close to an hour.  This might be a good logical

13   break for about five to ten minutes if that's okay

14   with you, Mr. Watkins.

15          MR. WATKINS:  Yeah, that's fine.               10:53:28

16          MR. McGEE:   Okay.  We'll go off the record.

17          THE VIDEOGRAPHER:  We're going off the

18   record.  This is the end of media unit 1.  The time

19   is 10:53 a.m.

20          (Recess.)                                      11:02:44

21          THE VIDEOGRAPHER:  We are going back on the

22   record.  This is the beginning of media unit 2.  The

23   time is 11:06 a.m.

24   BY MR. McGEE:

25       Q    Okay.  Dr. Zervas, during the break, did you  11:06:11
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1   have any conversations with your counsel?

2   A   I believe I said hi to them. It was a

3   30-second conversation.

4   Q   Understood. Coming back to your -- the

5   reports that you submitted, in support of your   11:06:27

6   opening report, did you speak with any Google

7   employees?

8   A   No, I did not.

9   Q   If you know, did anyone at the Analysis Group

10   speak with any Google employees?   11:06:44

11   A   Not that I know of.

12   Q   And why not?

13   A   Why not me or the Analysis Group?

14   Q   First you.

15   A   Because it was not necessary for the purposes 11:06:57

16   of completing my assignment.

17   Q   So in order to determine -- strike that.

18   Did you speak with any engineers at Google in

19   support of your opening report?

20   A   No, we did not --   11:07:20

21   MR. WATKINS: Objection; asked and answered.

22   BY MR. McGEE:

23   Q   I asked about employees on the first one, so

24   now I'm moving to engineers.

25   Did you speak with any engineers at Google in 11:07:31

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1   support of your opening report?

2   A   I'm sorry. Now I -- I need clarification.

3   So you said "employees" but now you say "engineers."

4   So you mean engineers that are not employees?

5   Q   Just getting a little more specific just in   11:07:44

6   case there was any issue with clarity.

7   A   No. I mean, employees is a super set that

8   includes engineers, so -- but I'm happy to answer

9   the more specific question, which is no, I did not

10 speak to any engineers.   11:07:59

11   Q   Okay. And I guess it would be the same

12 answer for anyone on Analysis Group speaking with

13 engineers at Google to support your opening report?

14   A   No. The answer would be slightly different.

15 They did not speak -- I did not ask them to speak to   11:08:17

16 any engineers at Google, and I do not know of them

17 speaking to any engineers at Google.

18   Q   Okay. When you reviewed the deposition

19 testimony of Dr. Glenn Berntson, did you have any

20 questions about that testimony?   11:08:35

21   A   Nothing specific that I recall right now.

22   Q   And the same for AbdelKarim Mardini. Did you

23 have any questions about the deposition testimony

24 that you reviewed?

25   A   I would like some clarification. Are you   11:08:52

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1   asking me if I could question what I might want to

2   go back to Mr. Berntson or to Mr. AbdelKarim Mardini

3   to clarify?

4   If that's your question, then, no, I did not

5   feel the urge to go back to either of these two   11:09:08

6   Google employees to answer [sic] them further

7   questions or clarifications.

8   Q   Were there any topics that you reviewed from

9   Dr. Berntson's testimony -- and this would have been

10   for the March 18th, 2022 deposition -- that you   11:09:21

11   would have requested any further clarification from

12   anyone at Google?

13   MR. WATKINS: Objection; vague.

14   THE WITNESS: Any further clarification. I

15   did not request; I did not communicate with any   11:09:38

16   Google employees or engineers for clarification or

17   any other sort of communication.

18   BY MR. McGEE:

19   Q   What about any attorneys for Google?

20   A   Nobody. Mr. Watkins --   11:09:57

21   MR. WATKINS: Sorry. I'm going to object to

22   the extent -- to the extent you relied on any

23   communications from counsel in forming your opinions

24   that are described in your report, you can answer.

25   But otherwise, I'm going to object and ask you not   11:10:09

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1   to answer based on the stipulation between the

2   parties.

3   THE WITNESS: Understood.

4   I think the question was now whether I spoke

5   to any counsel for Google, and the answer is yes, I   11:10:23

6   spoke, for instance, to Mr. Watkins multiple times.

7   BY MR. McGEE:

8   Q   Okay. Did you rely on any information that

9   Mr. Watkins relayed to you in forming the opinions

10   expressed in your opening report?   11:10:38

11   A   No, nothing of substance that I can recall.

12   These are my opinions in my report.

13   Q   Okay. So I think we've got the answer, but

14   let me just ask it more generally. You list all of

15   these depositions here on Appendix C-1 of your   11:10:54

16   opening report.

17   After reviewing those depositions, did you

18   have any questions to clarify any of the testimony

19   that you asked of any Google engineer?

20   A   The answer is that to complete my assignment,   11:11:18

21   no further questions were needed or clarifications

22   beyond what I read in the depositions. I had what I

23   needed to form sufficient bases for the opinions

24   that I offer in this report.

25   Q   Thank you.   11:11:36

1   And did you speak with any other experts that

2   Google has retained in this case?

3   A   No, I have not had any contact with other

4   experts that Google has retained in this case.

5   Q   So you have not spoken with a Paul Schwartz?   11:11:54

6   A   No, I have not.

7   Q   Have you spoken with an On Amir, A-m-i-r?

8   A   No, I have not.

9   Q   Have you spoken with an individual by the

10   name of Konstantinos Psounis?   11:12:22

11   A   No, I have not.

12   Q   Have you spoken with an individual by the

13   name of Bruce Strombom?

14   A   No, I have not.

15   Q   Do you know if you have spoken with anyone   11:12:41

16   who would have been working on their teams?

17   A   I have not. I would know if someone was

18   working for these people, I believe, so I have not.

19   Q   And how would you know that, Dr. Zervas?

20   A   Because when I hold meetings, it has to be   11:13:01

21   with people that I know what they do. And in this

22   particular case, I know whom I spoke to, I know

23   their affiliations, and they do not fit the

24   description that you have provided me.

25   Q   Do you know who Konstantinos Psounis is?   11:13:18

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1   Have you ever heard that name?

2   A   Yeah.   I know that he's an expert in this

3   case.

4   Q   Have you ever had a conversation with him?

5   A   I think I answered your questions no, but if   11:13:31

6   you're asking me more broadly outside this case, as

7   well, I -- most likely, no.   I understand he's a

8   computer scientist.   Whether -- if I met him, you

9   know, during the break of a conference, but I

10   wouldn't recognize him if I -- if he walked past me.   11:13:48

11   Let's put it this way.

12   Q   Understood.   You might have had a casual,

13   nonchalant conversation with Dr. Psounis but nothing

14   of substance that you can recall?

15   A   I even doubt that I had a nonchalant   11:14:00

16   conversation, but I don't want to be absolute,

17   because I attend conferences with hundreds of

18   people.   That's my own hesitation.

19   Q   And I'm not asking you to speak in absolutes

20   or anything else.   Just trying to get a better idea   11:14:09

21   of your familiarity with Dr. Psounis on a personal

22   interactive basis.

23   Okay.   And why would it not help your

24   analysis to speak with any Google engineers about

25   how the Google systems work on the back end?   11:14:33

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CONFIDENTIAL

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 1        A    Because my assignment is not about how the

 2   Google systems work in the back end.

 3        Q    Okay.  Same question about any Google

 4   employees who would not be within the subset of

 5   engineers.  Why would it not be relevant to speak      11:14:50

 6   with any of them to support the matters that you

 7   provide in your opening report?

 8        A    The same answer.  Because my analysis is not

 9   about what happens in the back end.

10             MR. McGEE:  And have you been provided --     11:15:09

11        Let me mark this as -- well, yeah.  I'm going

12   to mark as Exhibit 3 -- well, I guess I should ask

13   this first.

14             Has Dr. Zervas been cleared for attorneys'

15   eyes only or just confidential information?            11:15:43

16             MR. WATKINS:  Well, I'd have to go back and

17   check.  I don't have an objection if it is Google

18   attorneys' eyes only information.  If it's

19   plaintiffs' attorneys' eyes only information, I'd

20   have to leave that to your discretion.                 11:15:59

21             MR. McGEE:  Okay.  It's not.  It's something

22   that I think Google designated and the Court

23   reviewed.  This is going to be a larger document.

24   It's about 45 megabytes.  So if you'll just bear

25   with me, I'll get it uploaded as soon as I can.        11:16:16
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 1              And I apologize.  It did not get a -- an

 2      evidence sticker in my haste of hoping to upload it

 3      faster.  So at a break, if we can get that fixed.

 4              (Exhibit 3 was marked for identification

 5               and is attached hereto.)                    11:16:42

 6      BY MR. McGEE:

 7          Q   Dr. Zervas, I'm showing you what's been

 8      marked as Exhibit 3.

 9          A   Let me see if it loads now that it's ready.

10      Okay.  I'm going to open Exhibit 3 now if you'll       11:16:52

11      give me just one second.

12              Yep, fax transmission, right?  That's the

13      one?

14          Q   Yes, sir.

15          A   Thank you.                                     11:17:01

16          Q   If you would take as much time as you need to

17      review that document.

18              My question, so that you have the benefit of

19      the question for your review, is whether you've ever

20      seen this document before.                             11:17:13

21          A   Thank you.  I understand the question.  Let

22      me please take just a few seconds to review the

23      document, because there are many documents I

24      reviewed for this case.

25          Q   If you need more than a few seconds, you just  11:17:23
```

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 1   let us know, Dr. Zervas.

 2   A   I appreciate the flexibility.

 3   I'm sorry. When I scroll down, it takes a

 4   while to load, because it's big. I'm really sorry,

 5   but I'm getting there.   11:18:33

 6   Q   I appreciate that.

 7   A   Is that one document, or is it one PDF that

 8   might contain multiple documents, if you understand

 9   my question?

10   Q   It's a PDF that I believe is 58 pages.   11:18:46

11   A   Great.

12   MR. WATKINS: I'm going to go ahead and take

13   this chance to request that this transcript be

14   designated as confidential.

15   MR. McGEE: No objection to that.   11:19:05

16   THE WITNESS: Let me just scroll back up to

17   make sure.

18   MR. McGEE: And, Mr. Watkins, are you asking

19   for the portion of this in this exhibit to be marked

20   confidential or the deposition in its entirety?   11:19:19

21   MR. WATKINS: I'm going to say the deposition

22   more generally. I think we got into potentially

23   some confidential information, for example, with the

24   Arizona location tracking case and his engagement in

25   that case. But if your request is to limit it to   11:19:33

                                                    Page 51

```
 1   specific portions, we can take that up after the

 2   deposition.

 3           MR. McGEE:  No, that's fine.  I was just --

 4   as he's reviewing it, but thank you for that.

 5           MR. WATKINS:  Yep.                          11:19:47

 6           THE WITNESS:  Mr. McGee, thank you for the

 7   time.  I'm ready to answer your question.

 8           To the best of my recollection, I have not

 9   seen this document before.

10   BY MR. McGEE:                                       11:19:53

11     Q   Okay, Dr. Zervas.  Has Google informed you of

12   any incognito detection bits that Google employs in

13   its log mechanisms?

14           MR. WATKINS:  Objection; vague.

15           THE WITNESS:  What are incognito detection   11:20:10

16   bits?

17   BY MR. McGEE:

18     Q   Do you know what -- have you ever heard of an

19   incognito detection bit?

20     A   Oh, a bit as in -- you're using the computer   11:20:19

21   science term.  That's what you're saying, right?

22   Okay.

23     Q   Yes, sir.  I don't have the -- I don't have a

24   background -- a formal background in computer

25   science, but, yes, sir, I am using the term "bit,"   11:20:30
```

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1   b-i-t.

2   A   I see. I thought as in bits and pieces.

3   That's my -- as I said before, I think it's covered

4   by my previous answer that I have not had any direct

5   communication with Google employees, engineers or   11:20:44

6   otherwise, and they have not informed me of the

7   existence of such a bit.

8   Q   Okay. So you have never heard of something

9   that would go by the maybe_chrome_incognito bit?

10   A   Sitting here right now, I do not recall   11:21:10

11   anyone -- I -- I can tell you for certainty that

12   nobody has told me about this maybe -- how do you

13   say it? -- _incognito bit.

14   Q   Yeah, maybe_chrome_incognito bit?

15   A   My apologies. That's what I meant to say,   11:21:30

16   maybe_chrome_incognito.

17   Q   And, Dr. Zervas, during your testing, did you

18   ever encounter any data that indicated this bit

19   might exist?

20   A   Nothing in my testing or the public   11:21:43

21   documentation and other materials I considered

22   indicates any explicit signal that the browser -- I

23   presume this bit indicates that the browser is in

24   incognito mode. There is no signal that I noticed

25   that says that the browser is maybe in incognito.   11:22:03

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1   Q   Okay. And I'm going to have the same line of

2   questions for is_chrome_incognito. Have you ever

3   heard of that bit within Google systems?

4   A   I have not come across this bit, again, in my

5   analysis, or I have not seen it in any   11:22:30

6   communications in the analysis that I did for the --

7   for this case, as you asked me before.

8   Q   Same questions for a bit that is

9   is_chrome_non_incognito. Ever speak with anyone or

10   discover that bit through any of your testing?   11:22:53

11   A   No. My testing did not discover such a bit.

12   And, again, as we covered before, I have not spoken

13   to anyone at Google regarding this matter or any

14   other matter for this case.

15   Q   What about any other cases?   11:23:12

16   A   I have spoken to Google employees for other

17   cases.

18   Q   Okay. But specific to the incognito

19   detection bits, were the -- were you otherwise

20   informed about their existence through your work in   11:23:28

21   any other cases with Google.

22   A   Sitting here right now, I do not recall that

23   specific bit being disclosed to me. And certainly,

24   yeah, I -- I would tell you if I did. I don't

25   recall it.   11:23:45

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1   Q   Okay. So I know that you have not had a

2   chance to review Exhibit 3 in its complete

3   substance, but --

4   A   I have not.

5   Q   -- the -- this is an order from the Court   11:24:08

6   that sanctioned Google for not providing discovery

7   on the existence of these three bits prior to

8   February of 2022.

9   If you had known about the existence of these

10   bits, would you have studied them for your report,   11:24:28

11   your opening report?

12   A   The -- the brief answer is no. The longer

13   answer is no, because that was not part of my

14   assignment. My assignment was -- I apologize.

15   There is noise outside my window.   11:24:48

16   My assignment was to look at the

17   communications as they happen between Chrome and

18   Google servers when a user is visiting a third-party

19   website that is utilizing Google Analytics or

20   advertising services.   11:25:01

21   Now, I would need to know a lot more about

22   what these bits are, so, you know -- naming

23   variables in computer science, you know, people call

24   things one thing and they mean another.

25   So all you have told me is that there are   11:25:18

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1   these, you know, maybe_incognito and other

2   associated bits. How they're used, when they're

3   used, when they existed, if they existed -- I don't

4   know much about them.

5   Q   Okay. For your opening report, did you rely   11:25:36

6   on any of the plaintiffs' depositions or testimony?

7   A   Let me go back and remind myself.

8   Plaintiffs, do you have a specific person in mind

9   that you are asking me about?

10   Q   There are five plaintiffs, Dr. Zervas.   11:25:56

11   A   Oh, sorry.

12   Q   No need to apologize.

13   A   Here, that I'm not mixing up legal terms, you

14   mean Mr. Brown, Mr. Byatt and so on and so forth?

15   Q   Yes, sir. Mr. Brown, Mr. Chasom Brown;   11:26:10

16   Mr. William Byatt; Mr. Christopher Castillo;

17   Mr. Jeremy Davis and Ms. Monique Trujillo.

18   Did you review any deposition testimony from

19   any of those people for your opening report?

20   A   Deposition testimony, no. I recall those   11:26:28

21   names from the complaint when I first encountered

22   the case. And I do not recall exactly what was in

23   that complaint and whether there were any quotes by

24   these people, but, yeah, no deposition.

25   Q   Did you review any of their discovery   11:26:44

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1   responses for your opening report?

2   A   No.   I -- just to be clear, can you tell

3   me -- I don't think I did -- what is a discovery

4   response? Can you define that term for me so that I

5   don't misanswer?   11:27:00

6   Q   Sure. So there are three core types of

7   discovery responses that have been involved in this

8   litigation. The first is an interrogatory where

9   Google asks a question in writing of the plaintiff,

10 and the plaintiff provides a written answer.   11:27:14

11   Do you recall reviewing any interrogatories

12 from the plaintiffs in this case?

13   A   I -- sitting here right now, no. I do not

14 recall reviewing a document that sort of fits those

15 criteria that you describe.   11:27:26

16   Q   Okay. The second type of discovery request

17 at issue is a request for production, where in

18 writing, Google asks for a document, the plaintiff

19 then provides a response and may provide a

20 responsive document.   11:27:42

21   Do you recall reviewing any requests for

22 production that the plaintiffs would have responded

23 to in support of your opening report?

24   A   Again, I reviewed many documents, but to the

25 best of my recollection right now, nothing that fits 11:27:54

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1   the criteria that you describe.

2   Q   Okay. And the last type of discovery

3   responses are requests for admission. And that is a

4   request posed in writing by one party asking the

5   other to admit something, either a fact or a little   11:28:09

6   more contentious is a conclusion of law.

7   Do you recall reviewing any responses from

8   the plaintiffs that were posed by Google for

9   requests for admission?

10   A   Again, with the disclaimer that I reviewed a   11:28:27

11   lot of documents, nothing immediately jumps to mind

12   that fits the criteria that you describe. And these

13   are -- I apologize. These are like -- some of them

14   are novel terms to me.

15   Q   Understood. Thank you, Dr. Zervas.   11:28:43

16   Have you ever reviewed discovery responses in

17   other cases in support of the reports that you've

18   authored?

19   A   I'm -- I'm learning slowly what these things

20   are, so I could have reviewed, for instance -- one   11:28:59

21   thing that I can remember, a type of document. So

22   when you said "interrogatory," I have reviewed

23   interrogatories. That's something I recall, again,

24   sitting here right now. I have reviewed this type

25   of document, not for this case.   11:29:15

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1   Q   And why not for this case?

2   A   My answer would have to be, again, the same,

3   that I have sufficient bases for the opinions that I

4   provide in my report and in particular, my testing

5   and my data collection.   11:29:28

6   Q   Okay. But without seeing those

7   interrogatories, you don't know whether they would

8   assist with the testing and the conclusions that you

9   reached in your report. Isn't that fair?

10   MR. WATKINS: Objection; calls for   11:29:42

11   speculation.

12   THE WITNESS: I don't think that's fair. I

13   think that's -- it's -- your statement, I think,

14   involves a lot of assumptions. And based on my

15   professional experience, I'm confident that I know   11:29:51

16   how browsers work. I'm confident that I can capture

17   transmissions. I'm confident that I can analyze

18   those, and my assignment was exactly that.

19   So I don't think seeing a document would have

20   affected what transmissions happened between Chrome   11:30:06

21   and let's say Fiddler, the tool that I used to

22   capture transmissions. So --

23   MR. McGEE: Okay.

24   THE WITNESS: -- honestly, I don't think that

25   would have affected my analysis.   11:30:19

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```
 1      BY MR. McGEE:

 2         Q   Can you explain to me what Fiddler is.

 3         A   I would be happy to.  It's a tool that

 4      captures network traffic.

 5         Q   Okay.  And that's network traffic that is      11:30:31

 6      going away from the computer, correct?

 7         A   Exactly.  That's why before in the beginning

 8      of the deposition, you asked me if I ever looked at

 9      data that leaves the computer, that's exactly what I

10      had in mind when I hesitated to answer your question    11:30:46

11      and I provided further clarification.

12         Q   That's a -- that's a fair hesitation and a

13      fair clarification, Dr. Zervas.  Thank you.

14             But Fiddler will not tell you what is done

15      with that data once it leaves the computer, correct?   11:31:00

16         A   Nothing happens to the data.  The data is

17      transmitted, and, you know, it's not tampered by

18      anyone.  So I do not expect that what I capture with

19      Fiddler would be different to what arrives at the

20      destination of this network traffic, because Fiddler   11:31:21

21      is not ultimately the destination; it's an

22      intermediary.

23         Q   Right.  And -- and what I'm just getting a

24      concession on is Fiddler doesn't tell you what

25      Google does with the traffic once it receives it,      11:31:32
```

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1   correct?

2   A   No, Fiddler does not -- the version of

3   Fiddler that I use does not provide that feature.

4   Q   You have no way of determining with Fiddler

5   what Google does with the traffic once it's   11:31:46

6   received, correct?

7   A   You have no way of -- first of all, but what

8   it does, I don't know what this means, but if you're

9   asking about what happens to the traffic when it

10   arrives at the website, whether it's Google or   11:32:03

11   New York Times, Fiddler doesn't speak to that.

12   It simply monitors traffic between Chrome and

13   a destination that might be a Google site or it

14   might be The New York Times, and it provides an

15   accurate record of follow these transmissions.   11:32:24

16   Q   Okay. So, Dr. Zervas, just to wrap that up,

17   you don't know what was done with that data when it

18   was received by Google, correct?

19   MR. WATKINS: Objection; vague.

20   THE WITNESS: I know certain things that were   11:32:53

21   done. You know, they were used, for instance, to

22   provide analytics functionality to websites. I know

23   that they were used to provide, you know, publishers

24   that use the ad product with relevant ads to their

25   users.   11:33:12

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1   So I don't think that it's fair to say that I

2   don't know what Google does with that data.

3   BY MR. McGEE:

4   Q   That's based on your review of publicly

5   available information, correct?   11:33:23

6   A   That's based on my -- first and foremost, my

7   professional knowledge. I know how these things

8   work for my work. I have also reviewed public

9   documentation and potentially other things that I

10   cite in my reports.   11:33:42

11   Q   Do you know what a ▮▮▮ is at Google, ▮▮▮▮?

12   A   You know, that's interesting. I feel like I

13   have been asked this question before, and I do not

14   know, even though maybe I was told. But it sounds

15   familiar, but I do not know. That's the answer.   11:34:03

16   Q   Okay. Do you know what a ▮▮▮▮▮▮▮▮▮ is at

17   Google?

18   A   No. That term I have not heard before.

19   Q   Have you ever heard of the term "biscotti"?

20   A   Yes, biscotti I have heard.   11:34:14

21   Q   And how did you hear about biscotti?

22   A   I think it came up on both of the other cases

23   that we discussed, the Arizona case and the Calhoun

24   case. I think in both of them, it came up, but

25   just -- I would have to go and look precisely.   11:34:34

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1   Q   Okay. As you sit here today, do you know how

2   Google uses a biscotti value?

3   A   I describe, I believe, even in my Calhoun

4   report -- though, again, it's been a while since I

5   looked at it, so please excuse me -- certain   11:34:49

6   functionalities around biscotti. So I know it's a

7   cookie that Google uses, and I think, as I recall, I

8   discussed certain functionalities, yeah, I think in

9   my Calhoun report.

10   Q   Do you know in what logs biscotti values are   11:35:09

11   stored at Google?

12   A   Do you have a specific log in mind? I'm not

13   sure of, you know, what logs. Google is a huge

14   company, so, no, I do not know. Let me rephrase the

15   question.   11:35:29

16   If you're asking me do I know the name of a

17   specific log that stores biscotti cookie values,

18   sitting here right now, I do not recall the name of

19   such a log, but I don't preclude the possibility of

20   such a name arising during my research maybe for the 11:35:45

21   Calhoun case. But --

22   Q   Okay. But your research for the Calhoun case

23   would have involved confidential documents that

24   would have come from Google or speaking with Google

25   engineers to understand where a biscotti value would 11:35:59

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1   sit in any log at Google, correct?

2   A   No, that's not correct. I did not speak to

3   any Google engineers for my Calhoun case.

4   Q   Okay. Would it involve review of documents

5   that Google provided to you to understand where a   11:36:15

6   biscotti value would sit in a log at Google?

7   A   You will have to ask me a bit more precisely

8   about sits and log, but I think even if you defined

9   your question, my answer would be that it's been a

10   while since I reviewed my Calhoun report.   11:36:38

11   I don't recall this being a central issue in

12   my analysis, like identifying a specific log that

13   contains -- we haven't even quite defined what this

14   log would contain, so I -- my answer sitting here

15   right now is I do not recall.   11:36:55

16   Q   Okay. Well, let me just ask it -- this more

17   generally.

18   Any understanding of biscotti values and log

19   structures and their related log structures at

20   Google would have been based on confidential   11:37:13

21   material that Google would have provided to you; is

22   that correct? Google doesn't have a white paper

23   that talks about biscotti values, correct?

24   A   I see what you're saying, I think. So if I

25   can, I do not know if Google has any white papers.   11:37:29

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1   But based on my recollection, if I could come across

2   any related information to biscotti, most likely

3   based on my present recollection today and I came

4   here prepared to talk about our case -- and Calhoun

5   is a little bit further back -- my guess is that it   11:37:44

6   would have been in confidential documents that I was

7   not supposed to share or discuss with outside third

8   parties. That would be --

9   Q   Okay.

10   A   -- my best recollection.   11:37:56

11   Q   Same -- same line of questions with the

12   zwieback identifier. Are you familiar with that

13   term?

14   A   As familiar as I am with biscotti.

15   Q   And is it based on your receipt of   11:38:09

16   confidential material either in the Calhoun case or

17   this case?

18   A   I think it would be based only in the Calhoun

19   case. I don't recall seeing -- again, I reviewed

20   with many documents. But as you ask me the   11:38:25

21   question, my gut tells me that the knowledge

22   originates in the Calhoun case and not the case

23   we're discussing today.

24   Q   And, again, it's not in any publicly

25   disclosed -- excuse me.   11:38:37

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1   It's not in any publicly disclosed materials

2   where you could learn about a zwieback identifier

3   and how it's used at Google, correct?

4   A   I think this is an impossible question for me

5   to answer, because I have not reviewed every   11:38:53

6   publicly available -- you know, like there might be

7   academic papers. There might be -- I -- let me --

8   let me provide this answer.

9   I have not -- my recollection is that I have

10   not come across any publicly available sources where   11:39:04

11   zwieback is mentioned. But to completely preclude

12   the appearance of the term "zwieback" in any

13   publicly available document, I would hesitate to do

14   that.

15   Q   Okay. So, Dr. Zervas, if I can turn your   11:39:19

16   attention to Exhibit 1, paragraph 6. So that's

17   paragraph 6 of your opening report.

18   A   Certainly. I will open my hard copy,

19   Mr. McGee.

20   Q   Certainly. And no objection to that as long   11:39:32

21   as your counsel's okay with it.

22   A   I'm there, Mr. McGee.

23   Q   Thank you. If you could please read

24   paragraph 6 for me, aloud.

25   A   So paragraph 6 (as read):   11:39:47

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1   "Because cookie values associated

2   with Private Browsing Sessions are

3   not shared with other browsing

4   sessions, this information cannot be

5   used to link the Private Browsing   11:39:59

6   Mode activity to a user or her

7   device after that Private Browsing

8   Session is closed. Based on my

9   experience, information I have

10   reviewed, and testing I have   11:40:10

11   performed, it is also my opinion

12   that, to the extent Google receives

13   cookie values when a user (who is

14   not logged into a Google account)

15   visits in Private Browsing Mode a   11:40:23

16   third-party website containing

17   Google analytics or advertising

18   code, those cookie values would be

19   distinct from any cookie values that

20   Google may receive when the user is   11:40:37

21   in Regular Mode. As a result, these

22   cookie values cannot be used to link

23   the Private Browsing Mode activities

24   to a user or her device after that

25   Private Browsing Session is closed,   11:40:49

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1   which would prevent Google from

2   using the cookie values to create a

3   'cradle-to-grave profile of users,'

4   as Plaintiffs allege."

5   Q   And, Dr. Zervas, my question is, did you work   11:41:04

6   with anyone at Google to confirm that the cookie

7   values would be distinct from any cookie values that

8   Google may receive when the user is in regular mode

9   and, therefore, cannot be linked between private

10 browsing and regular modes?   11:41:21

11   A   The cookie values that are sent to Google are

12 observable by inspecting the network traffic between

13 Chrome websites and Google services using a tool

14 like Fiddler. So this is not something that I would

15 need to reach out to Google since I can observe on   11:41:39

16 my own.

17   Q   So, Dr. Zervas, you do not have any technical

18 understanding of what Google does when it receives

19 the different cookie values and whether there is any

20 mechanism at Google that could associate those   11:41:58

21 cookie values with other cookie values, correct?

22   A   So you're saying that we agree that per my

23 analysis, those cookie values are different, but

24 that is the situation we're thinking about. So we

25 have regular mode session with a cookie value set to   11:42:17

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1   1, let's say for simplicity.

2   We have a private browsing mode session, the

3   same cookie value set to 2. These two numbers are

4   different. They cannot be used to provide a link to

5   the two browsing sessions. This is my opinion here.   11:42:35

6   You're asking me how someone can use those

7   two values and link them somehow? That's the

8   question?

9   Q   I'm asking if you spoke with anyone at Google

10   to determine whether there are any systems or ways   11:42:48

11   that Google itself can link those cookie values.

12   A   Thank you. I have not spoken to anyone at

13   Google for this case regarding this question that

14   you're posing now or any other related question.

15   Q   Okay. And cookie values are transmitted with   11:43:07

16   other values like an IP address, correct?

17   A   Correct.

18   Q   A User-Agent string, correct?

19   A   It may or may not be present, yes.

20   Q   Okay. And there are -- let me ask you this.   11:43:21

21   In the cookie values that you observed

22   through Fiddler, how many other pieces of

23   information were associated with those cookie

24   values?

25   MR. WATKINS: Objection; vague.   11:43:39

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1   BY MR. McGEE:

2   Q   And -- and by pieces of information, I mean,

3   like an IP address, a user agent string or other

4   identifying information.

5   MR. WATKINS: Same objection.   11:43:47

6   THE WITNESS: Cookie values are not

7   necessarily associated with a user agent string

8   to -- for instance, I don't believe they are. I do

9   provide -- let me point to -- I think I have a

10   screenshot to that effect. Let me see.   11:44:02

11   So if you look at Figure 8 on page 22 of my

12   opening report, this provides an example of a cookie

13   and other associated values that, you know, sort of

14   go along with a cookie, if you will. And that's a

15   pretty typical thing that happens based on my   11:44:29

16   professional experience.

17   BY MR. McGEE:

18   Q   Okay. Yeah. I should have marked it, but I

19   don't have the figure.

20   If you recall --   11:44:41

21   A   It's on page 22.

22   Q   I do see that, and that's very helpful.

23   There is a figure where you open up the developer

24   tools.

25   Do you recall that from your report?   11:44:49

                                                      Page 70

1   A   I recall it, but I will have to scroll

2   through the report myself to find the correct page.

3   Let's see.

4   Q   Right. So, for example, let's go to

5   Figure 4. It's on page 16, Dr. Zervas.   11:45:00

6   A   I am there, Mr. McGee.

7   Q   Is any of this information transmitted with

8   the cookie value to Google?

9   MR. WATKINS: Objection; vague.

10   THE WITNESS: Mr. McGee, what you're looking   11:45:18

11   at is labeled as a response. So nothing of that is

12   transmitted to Google. This is what comes back from

13   Google to the Chrome browser.

14   BY MR. McGEE:

15   Q   Okay. All right. I'll mark that to come   11:45:28

16   back to when we're closer to a break. And --

17   A   Since you mentioned that, I would appreciate,

18   again, a break roughly on the hour, whenever -- not

19   now, but roughly on the hour would be great since

20   you mentioned it.   11:45:59

21   Q   Dr. Zervas, whenever you want to take a

22   break, I am totally fine taking a break. I should

23   have told you that at the beginning. Typically, I

24   do try to take a break every hour. Comfort breaks

25   for anyone I have no problem with. I'm very   11:46:12

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1   flexible in the way I take depositions.

2   So you just let me know if you need a break.

3   As long as a question is not pending, I am happy

4   to -- to give you the break.

5   A   I would like to continue a bit longer, and   11:46:24

6   then on the hour, just like you did before, that

7   would be great. I think that's a good schedule for

8   me, as well.

9   Q   Okay. And, Dr. Zervas, again, with how

10 cookie values -- the cookie value 1 from -- I   11:46:39

11 believe it was regular mode and the cookie value 2

12 from private browsing mode, did you review any code

13 from Google in how those might be processed after

14 they are received by Google?

15   A   No, I have not received -- I have not   11:46:57

16 reviewed, I meant to say, any such code from Google.

17   Q   Okay. So with the statement you provide in

18 paragraph 6, you have not spoken with any Google

19 employees about how those cookie values are

20 processed on Google's end, correct?   11:47:15

21   A   I have not spoken to any Google employees or

22 engineers as we established before regarding this

23 question or any other related matter.

24   (Simultaneous speaking - unreportable.)

25   MR. WATKINS: I'm going to object to the --   11:47:30

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1   sorry. Object to the prior question as vague.

2   Go ahead.

3   BY MR. McGEE:

4   Q   And you -- and with respect to the statements

5   from paragraph 6 in your opening report, you have   11:47:36

6   not reviewed any code from Google in how the

7   respective cookie values are processed on Google's

8   end, correct?

9   A   Correct --

10   MR. WATKINS: Same objections.   11:47:49

11   THE WITNESS: I'm sorry. My apologies.

12   Correct, Mr. McGee. I have not reviewed any

13   source code by Google that speaks to the question

14   that you're asking.

15   BY MR. McGEE: 11:47:58

16   Q   And you have not reviewed any documents that

17   would inform how Google processes the cookie values

18   on its end after they're received?

19   MR. WATKINS: Objection; vague.

20   THE WITNESS: Once again, going back to this   11:48:13

21   sort of, like, ongoing discussion that we have, the

22   focus of my report was to understand cookie values

23   as they're transmitted to Google-associated domains

24   when users interact with other non-Google sites, and

25   that was the focus of my analysis.   11:48:37

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1   I should say, Mr. McGee, also, that to bring

2   in my professional expertise, this is the -- the

3   industry standard way to associate browsing

4   sessions. So let's say me browsing on my computer

5   today and then me browsing with the same browser   11:48:56

6   tomorrow and saying these two sessions belong to the

7   same user, the industry standard way is through the

8   use of cookie values as exactly I discussed them in

9   my report.

10   Now, I think you are asking me about other   11:49:15

11 methods of, perhaps, accomplishing the same. And I

12 have not come across any source code or discussions

13 that tell me there is another method to accomplish

14 that same task.

15 BY MR. McGEE: 11:49:31

16   Q   Have you asked Google whether it employs any

17 other methods to accomplish that same task of

18 associating browsing sessions?

19   A   Again, it was outside the scope of my

20 assignment, because I could see with my own eyes   11:49:43

21 that these cookie values are different, which is the

22 point that I made in my report. And when I say

23 "different," just to be clear, I mean between

24 regular mode and an incognito session or two

25 different incognito sessions.   11:50:03

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1   Q   Right. But you did no further investigation

2   into how Google might associate them after they are

3   received, correct?

4   A   I did not, though, again, for completeness, I

5   mentioned before, as well, I do understand, if I'm   11:50:17

6   understanding your question correctly, that there

7   are other experts employed by Google that may be

8   looking at this sort of -- let's call them, again,

9   server-side or back-end issues. That's my

10 understanding.   11:50:33

11 Q   But you did not speak with any of those

12 experts, correct?

13 A   As I answered before and you gave me a few

14 names of experts, I have not spoken to these

15 experts, no.   11:50:43

16 Q   Have you spoken with anyone -- expert, Google

17 engineer or otherwise -- to investigate how Google

18 might use those cookie values to associate browsing

19 sessions after they are received?

20 A   So once again, just to be clear, I did not,   11:51:01

21 but the reason I did not is because the purpose of

22 my report is to look at exactly what cookie values

23 are communicated to Google under regular, incognito,

24 various settings and to establish when these are the

25 same and when these are different.   11:51:23

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```
 1            That was exactly the scope of my assignment,

 2      which, again, looks at the industry standard

 3      practice of associating browser session 1 with

 4      browser session 2.

 5            So my report is about what, you know, any web    11:51:35

 6      developer might do to associate browsing sessions

 7      and what happens when users employ incognito mode or

 8      other private browsing modes, because I discuss

 9      other browsers in my report, as well.

10         Q   Did you discuss with anyone at Google how       11:51:51

11      long cookie values from regular mode are stored?

12            MR. WATKINS:   Objection; vague.

13            THE WITNESS:   Cookie values are typically

14      stored on the user's browser.   And they --

15            MR. McGEE:   Okay.   Then --                     11:52:06

16            (Simultaneous speaking - unreportable.)

17            THE WITNESS:   -- provide a date that varies

18      by cookie.

19      BY MR. McGEE:

20         Q   Yeah, sorry.   So let me -- let me say this.    11:52:15

21            The information that is transmitted -- so

22      let's not limit it to cookie values, but the

23      information that is transmitted to Google from a

24      user's browser, have you discussed with anyone at

25      Google how long that information is retained from a    11:52:33
```

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1   regular mode browsing session?

2   MR. WATKINS: Objection; vague.

3   THE WITNESS: Again, we would have to be a

4   bit more specific, but I think I can provide an

5   answer to your question, which is, number one, for   11:52:47

6   the -- for this case, I have not spoken to anyone at

7   Google; thus I have not spoken to anyone at Google

8   about this specific topic either.

9   Number two, again, I have to be careful not

10   to disclose anything that I should not be   11:53:03

11   disclosing. I do recall from other cases coming

12   along, you know, some previous sort of retention

13   policies, though I -- if you ask me what were the

14   timelines or the specific data, I don't remember.

15   But I know what I know, and what I can tell   11:53:21

16   you now is that I -- Google employs certain policies

17   and procedures that might affect the retention of

18   certain pieces of data. I don't remember asking

19   about this data or other.

20   BY MR. McGEE: 11:53:35

21   Q   Okay. Let me ask this. Do you know what

22   authenticated data is? Have you ever heard that

23   term?

24   MR. WATKINS: Objection; vague.

25   THE WITNESS: Authenticated data?   11:53:43

1   BY MR. McGEE:

2   Q   Authenticated.

3   A   You will have to give me a bit more context.

4   I know what authentication is, but authenticated

5   data, presumably something that has been   11:53:53

6   authenticated, a piece of paper that has been

7   authenticated.

8   Q   Have you come across the term "authenticated

9   data" in your work in this case?

10   A   You mean like as a term, like as with capital   11:54:06

11   A and capital D, that's what I should be thinking,

12   like a specific terminology?

13   Q   I would say it's a term of art for this case.

14   It's -- it's, yeah, a term of art or jargon.

15   A   Got it. No, I do not recall sitting here   11:54:19

16   right now. And it might have appeared in some

17   document that I reviewed, but it's not certainly

18   something that stayed with me, if that -- if that

19   makes sense.

20   Q   Okay. Do -- Dr. Zervas, do you know what a   11:54:32

21   twice-baked cookie is?

22   A   No, I do not know what a twice-baked cookie

23   is.

24   Q   Okay. So you've never heard the term "twice-

25   baked cookie" in relation to how Google might   11:54:48

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1   collect information?

2   A   Again, I want to be precise, that if it -- if

3   it's contained in some document that I might have

4   access to, maybe. I don't know. But I do not

5   recall coming across it sitting here today.   11:55:06

6   And I do not recall, you know, the urge to go

7   figure out what a twice-baked cookie is in order to

8   offer the opinions that I offer in this report.

9   Q   Okay. Do you know how a biscotti identifier

10   is generated?   11:55:26

11   A   How it is generated? No, I do not know the

12   source code that generates biscotti identifiers.

13   Q   Would you have to see source code in order to

14   understand how a biscotti identifier is generated?

15   A   That would be the ultimate source, if you   11:55:43

16   will, to make sure that you know, but also you can

17   ask someone or they -- documentation. There are

18   probably many different ways to see how an

19   identifier is generated. So I -- I do not know if

20   you would need to speak to someone or see the code   11:56:00

21   or -- yeah.

22   Q   Same questions with the zwieback identifiers.

23   Have you -- do you know how they're generated?

24   A   I can only speculate if you want just based

25   on --   11:56:18

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1   Q   I'm not -- actually, your -- your counsel

2   will counsel you against speculating, and I don't

3   want you to speculate.

4   So, Dr. Zervas, do you know how zwieback

5   identifiers are generated without speculating?   11:56:29

6   A   Thank you for clarifying.

7   No, I do not have a specific insight into the

8   exact procedure used to generate the zwieback

9   identifiers or that biscotti, as you asked me

10   before.   11:56:46

11   Q   Do you know whether twice-baked cookies

12   contain any other identifier within them?

13   A   Well, I answered before that I do not know

14   what the twice-baked cookie is, so it's hard for me

15   to say whether it contains a thing or another thing.   11:57:00

16   Q   And how much research have you done on how

17   cookies work?

18   A   In my life?

19   Q   Throughout your professional career.

20   A   In terms of hours? I -- let's call it a   11:57:17

21   substantial amount for me to understand how cookies

22   work. So if you wanted me to develop a website that

23   uses cookies, I am able to do that. If you wanted

24   me to tell you what cookies flow back and forth

25   between a site and your browser, if you are curious   11:57:30

                                                    Page 80

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1   about that, I could do that.

2   So --

3   Q   And that's based on your education in part?

4   A   Both my education and my professional work.

5   So, for instance, between my undergraduate degree   11:57:44

6   and my Ph.D., I also did some independent consulting

7   where I developed websites. That's -- I know how

8   many web technologies work.

9   Q   Okay. So easily a decade of education and

10   then applying that education and your experience to   11:58:02

11   understand how cookies work, correct?

12   A   I mean, my -- my CV, I think, answers all

13   these questions, yes. It doesn't -- it doesn't have

14   a section on cookies, but I'm telling you right now

15   that I know what cookies are, and I have come across   11:58:20

16   them both in my research and in my professional

17   work.

18   Q   Okay. And if you were going to assign work

19   on cookies to someone with, let's say, an

20   undergraduate degree in economics, how much   11:58:31

21   oversight would you want to have over that person

22   conducting those experiments with cookies in a

23   technical manner?

24   MR. WATKINS: Objection; vague, calls for

25   speculation.   11:58:43

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1   THE WITNESS: I mean, that depends on many

2   factors, including the experience of that person,

3   you know, how good they are at their work, how

4   complicated the task is, how much free time I have

5   and what other obligations I have.   11:59:05

6   So it's -- it's -- I'm sorry. I cannot

7   answer that in a precise manner, but these are the

8   kinds of factors that would go into my mind to

9   arrive at an answer of how much oversight I would

10   need to provide to an economics undergrad.   11:59:15

11   BY MR. McGEE:

12   Q   Okay. So if an economics undergrad with no

13   technical experience or -- or anything else on their

14   résumé applied to help you with some cookie testing,

15   is that someone that you'd be able to hire, or you'd 11:59:25

16   have to ask a few more questions of to determine

17   their level of sophistication with cookies?

18   A   I --

19   MR. WATKINS: Same objection. Vague and

20   calls for speculation.   11:59:38

21   THE WITNESS: I don't recall ever hiring

22   anyone without asking them a few technical

23   questions. In fact, I might ask that person

24   questions outside cookies just to sort of gauge

25   their overall technical competence, if that makes   11:59:53

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1   sense.

2   MR. McGEE: Okay. I think we're directly on

3   the hour, so if now's a good time to take a break,

4   Dr. Zervas, happy to give you ten minutes.

5   THE WITNESS: Thank you. That -- that works   12:00:08

6   for me.

7   MR. McGEE: Great.

8   THE VIDEOGRAPHER: We're going off the

9   record. This is the end of media unit 2. The time

10 is 12:00 p.m.   12:00:16

11   (Recess.)

12   THE VIDEOGRAPHER: We're going back on the

13 record. This the beginning of media unit 3. The

14 time is 12:11 p.m.

15 BY MR. McGEE: 12:11:29

16   Q   Dr. Zervas, before the break, we were

17 speaking about cookie values and how Google receives

18 information from browsing, whether it be regular or

19 incognito or private browsing.

20   My question is, do you know how long Google   12:11:45

21 retains any of that information?

22   MR. WATKINS: Objection; vague.

23   THE WITNESS: As I -- as I said before, I do

24 not have a precise answer, including because we have

25 not really defined "information" here. This is a   12:12:04

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1   very broad term.

2   But what I can tell you is that in the

3   context of other work that I have done without

4   disclosing anything that I believe is confidential,

5   I have come across retention policies about certain   12:12:18

6   pieces of data, though I do not recall their exact

7   comments right now.

8   BY MR. McGEE:

9   Q   Okay. And if I could draw your attention to

10   paragraph 9 of Exhibit 1, your opening report.   12:12:33

11   A   Certainly. I am there, Mr. McGee.

12   Q   Dr. Zervas, in this paragraph, you describe

13   how websites and users can control what is collected

14   by Google, correct?

15   MR. WATKINS: Objection to the extent it   12:13:00

16   mischaracterizes the document.

17   THE WITNESS: I'm just quickly going through

18   the paragraph, Mr. McGee. That's why I'm looking

19   down.

20   MR. McGEE: Take your time, Dr. Zervas.   12:13:12

21   THE WITNESS: I think there's more in this

22   paragraph, but I do see at least one sentence that

23   relates to what you said.

24   BY MR. McGEE:

25   Q   Okay. What cookie settings would prevent   12:13:30

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1   Google from collecting private browsing activity on

2   third-party websites?

3   MR. WATKINS: Objection; vague.

4   THE WITNESS: Can you define what is

5   classified according to your question as private   12:13:45

6   browsing activity?

7   BY MR. McGEE:

8   Q   Anything that I do when I enable incognito

9   mode after clicking the button that would enable

10   incognito mode. How would I stop Google from   12:13:59

11   collecting that information or activity?

12   A   I am not sure that I agree that anything that

13   happens in incognito is, you know, private browsing

14   activity as you define it. But if we assume that

15   this is your definition and you're asking   12:14:21

16   specifically about cookies, one thing you can do is

17   block cookies.

18   Q   Okay. Would that prevent Google from

19   collecting any of the activity that I perform while

20   in incognito mode?   12:14:39

21   MR. WATKINS: Objection; vague.

22   THE WITNESS: I think my -- you asked me

23   about an economics undergrad before. If an

24   undergrad in economics came to me with such a

25   question, I would say, well, let's look at an   12:14:56

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```
 1      example because -- you know, let's -- tell me what

 2      information you have in mind.

 3             Is it the cookie?  Is it the header?  Are you

 4      incognito?  What setting are you thinking about?

 5      There are so many permutation of these things.      12:15:07

 6             If you notice, I provide, like, a pretty

 7      thick exhibit deck.  And I think to some extent, I

 8      believe, that answers your question, what -- how

 9      data flows are affected when different settings are

10      in place or not in place.                           12:15:21

11             I provide specific examples in my exhibits so

12      it would be helpful to me, at least, to have a

13      specific frame of reference and discuss a technical

14      example, if that makes sense.

15      BY MR. McGEE:                                       12:15:32

16         Q   Sure.  So I start an incognito browsing

17      session by clicking -- I think it was, what, control

18      shift N was the shortcut that you provided in your

19      report.  That's one of the ways to enable incognito

20      mode?                                               12:15:45

21         A   In Windows, yes.

22         Q   In Windows.  And then it's, what, command

23      shift N, I think, on Mac?

24         A   I don't recall.  I haven't used a Mac in, you

25      know, daily use in a significant amount of time.    12:16:00
```

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1   Q   Understood. So at that point, I want to make

2   sure that Google doesn't see what I do when I'm on

3   non-Google websites. I don't want them to collect

4   anything that I do, clicks, rendering of pages or

5   any other activity.   12:16:17

6   What cookie setting would I enable to prevent

7   that?

8   A   Okay. There -- it's a complex question, so

9   let me get some time to answer.

10   So first of all, you're imagining that   12:16:35

11   they're going to a first-party site -- let's call it

12   newyorktimes.com. And then, what, the site uses

13   third-party services by Google and you're in

14   incognito; is that the setting?

15   Q   I'll take that example, sure.   12:16:48

16   A   All right. And then you want no

17   communications whatsoever to Google. Do I

18   understand correctly? That's what you said, I

19   think.

20   Q   I'll take your example.   12:17:02

21   A   Okay. So first of all, this falls outside,

22   you know, I believe, the interpretation of what I

23   see on this black screen of what incognito provides.

24   So this is not, you know -- incognito is not about

25   blocking indiscriminately any transmissions to   12:17:25

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1   Google. And, in fact, my understanding is that

2   neither are other private browsing modes of other

3   browsers.

4   So now we are in the land of you wanting to

5   accomplish something very specific and special. And   12:17:41

6   I think some of my exhibits, again, speak to that

7   regard. So if I look at -- I have not provided a

8   specific test that blocks everything, but this could

9   be -- based on my professional experience,

10   potentially it is to accomplish -- for instance, if   12:17:58

11   you look at my discussion of uBlock, one of the

12   extensions that I discuss, if I recall correctly,

13   you can have custom filters. A filter is simply

14   something that matches communication patterns, and

15   it says, I don't want this to happen.   12:18:16

16   So if you were -- if you had that specific

17   need for whatever purpose, you could use this

18   extension, and then that would block communications

19   to Google assuming you configured it correctly.

20   Q   And I think in your report, which is   12:18:30

21   paragraph 114 where it's either uBlock or micro

22   block -- I'm not sure if they use the u in that way,

23   but either way, paragraph 114, you describe how that

24   can block Ad Manager, correct?

25   A   I've been calling it uBlock forever, but it   12:18:54

1   could be micro block. That's a good point. Okay.

2   So I'm going to read paragraph 114.

3   Q   Sure.

4   A   Yeah, this speaks -- this is slightly more

5   specific than your requirement. Your requirement   12:19:17

6   was to block any communication whatsoever to Google.

7   And I think what I'm broadly saying here is that

8   tools like uBlock or micro block, which are commonly

9   used by many users, can be used to block certain

10 communications through -- sorry. Let me use the   12:19:37

11 language in my report -- to alter the flow of data

12 to Google Ad Manager -- yeah.

13   Q   Okay. So it would alter the flow of data to

14 Google Ad Manager but not prevent it, correct?

15   A   It depends on the circumstances. It depends   12:19:51

16 on the website you -- you visit. It depends on how

17 you have configured it. There are so many

18 settings -- no. Let me -- the term "settings" is

19 loaded.

20   There are so many different circumstances to   12:20:07

21 consider, but, again, I think we can look at them

22 individually, especially if they appear in my

23 exhibits.

24   Q   Okay. How many -- I think in your report you

25 say that there were about 10 million downloads or   12:20:17

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1   10 million users of uBlock or micro block?

2   A   In paragraph 114, I say that both are used,

3   referring to uBlock and AdBlock, by more than

4   10 million users, according to the extension pages,

5   and then I provide the citation 145.   12:20:36

6   Q   How many of -- how many of those are U.S.-

7   based users?

8   A   I -- this is not disclosed on the extensions

9   page.

10   Q   Do you know how many of those users engage   12:20:47

11   private browsing mode?

12   A   U.S. users that use either of these

13   extensions? No, I do not have an exact number that

14   I can give you.

15   Q   Okay. And I think you described earlier in   12:21:01

16   your testimony on this topic that -- sorry. Let me

17   just ask it this way.

18   Does Firefox prevent communications to Google

19   when it is in private browsing mode?

20   A   I would like to use the more precise language 12:21:35

21   again, that private browsing mode, opening a private

22   window in Firefox can alter the flow of data to

23   certain Google services.

24   Q   And that alteration of the flow of data to

25   certain services you did not observe in Chrome   12:21:58

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1   without any extensions, correct?

2   MR. WATKINS: Objection; vague.

3   BY MR. McGEE:

4   Q   So in other words --

5   (Simultaneous speaking - unreportable.)   12:22:13

6   THE WITNESS: Please go ahead.

7   BY MR. McGEE:

8   Q   Yeah. So I'll just clarify to get to the

9   point.

10   By default, Firefox's private browsing mode   12:22:19

11   alters or modifies the flow of data to Google.

12   Comparing that with Chrome, there's no alteration or

13   modification by default when you engage incognito,

14   correct?

15   MR. WATKINS: Objection; vague.   12:22:38

16   THE WITNESS: Just I would hesitate to say

17   that if there is a specific example that you want to

18   discuss, I would be happy to look at it.

19   BY MR. McGEE:

20   Q   Okay. What, by default, alteration does   12:22:52

21   Firefox cause to the flow of data to Google when a

22   private browsing mode is engaged?

23   A   I'm -- I'm briefly going to scroll through my

24   exhibits, because I performed some tests to that

25   regard, simply to refresh my memory.   12:23:12

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 1        Q   Sure.

 2        A   I'll give you an example because, again,

 3    being exhaustive is impossible with those things.

 4    But I'm looking at Exhibit 1.1 if you want to go

 5    there, the third table that is labeled "Firefox."      12:23:45

 6        Q   Dr. Zervas, I'm sorry, what page are you on

 7    of your report?

 8        A   You know, the hard copy doesn't have page

 9    numbers here.  So it's -- if you go to the exhibit

10    deck, it's the first page of the exhibit deck, if      12:23:59

11    that helps you.  And I'm happy to find it on Exhibit

12    Share and give you --

13        Q   I think if you did that on Exhibit Share --

14    but is it the page that is directly after your

15    signature block on page 96 of your opening report?     12:24:16

16    Is that what you're referring to?

17        A   No.  I'm referring -- yes.  Sorry.  My

18    apologies.  Exactly.  So after page 96, the next

19    page of comments.

20        Q   Okay.                                          12:24:30

21        A   Exhibit 1.1, do you see that?

22        Q   I do.  Thank you.

23        A   And then if you click one more page, you see

24    two tables, one labeled "Edge" and one labeled

25    "Firefox"?                                             12:24:41
```

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1   Q   Yes, sir.

2   A   And then you asked me -- I offered to give

3   you an example of some modification that happens to

4   the data flow. For instance, if you look at the --

5   you know, the cookie -- let's call it in the last   12:24:53

6   line, nyt-jkidd, that has the value anon in regular

7   mode 1 and regular mode 2.

8   So initial session and session 1, the first

9   two columns, and then it's absent in private

10   browsing mode session 1.   12:25:10

11   Q   Okay. The behavior that is reflected here on

12   Exhibit 1.1, which is the second page after your

13   signature block in your opening report, does that

14   occur by default in Chrome's incognito mode?

15   A   So let's go back, because I provide a Chrome   12:25:32

16   table. So if you scroll back one page and if you

17   look at this nyt-jkidd cookie for Chrome, it has the

18   value anon in column 3, whereas in Firefox, it's

19   absent.

20   Q   But also the gads value is transmitted by   12:25:54

21   default in Chrome incognito mode but not Firefox

22   private browsing mode, correct?

23   A   In this particular exhibit, this is correct,

24   what you stated, yes.

25   Q   And the ga cookie value, same thing. It is   12:26:09

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1	blocked by Firefox's private browsing mode by
2	default but not Chrome's incognito mode by default,
3	correct?
4	A That is correct, but I want -- because
5	there's a lot of letters and numbers here, I also	12:26:29
6	want to highlight a crucial distinction, which is
7	that if you look at the first table, Chrome, the
8	value for the -- we were talking about the _ga
9	cookie -- or correct me if I'm wrong -- the value in
10	column 2, regular mode session 1, and column 3,	12:26:48
11	private browsing mode session 1, I want to point out
12	that these are different values. So even though the
13	value is not absent, it's a different cookie value.
14	Q Okay. And even though those values are
15	reflected differently as you see them, you, again,	12:27:06
16	do not know what Google does with them after they
17	are received and whether they are associated through
18	any mechanism at Google, correct?
19	MR. WATKINS: Objection; vague.
20	THE WITNESS: As I said before, I do have --	12:27:22
21	as I said, I have developed websites. I have some
22	experience. I do understand, you know, the purpose
23	of these things to provide analytics, to provide
24	advertising for other cookies. So I do know
25	somewhat what Google does.	12:27:39

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1   But then your specific question about what

2   happens in the back end, as we discussed before,

3   that was outside the scope of my assignment. My

4   assignment was to look at what happens to this

5   cookie value, which is the primary mechanism that   12:27:52

6   web developers would use to link these two sessions

7   that we're looking at and establishing that the data

8   flows are different depending on the user private

9   browsing mode or not.

10   And the commonality I see in my analysis here   12:28:08

11   is that indeed, both in Firefox and in Chrome, there

12   is a difference in the flow between regular mode and

13   private mode. The different circumstances are

14   different, but there is a difference, which was the

15   point of my analysis.   12:28:24

16   BY MR. McGEE:

17   Q   And you said that web developers are unable

18   to link the mode -- excuse me.

19   Web developers are unable to link the

20   sessions between the regular mode and the private   12:28:34

21   mode because of these different cookie values.

22   That's what you just testified to, partially?

23   A   Not even partially. I did not say that web

24   developers -- and if -- if -- let me say that again.

25   I said web developers would use cookies to associate   12:28:50

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1	session 1 with session 2. That's the mechanism.
2	That's my exact statement. That's the industry
3	standard method.
4	You know, if we were interviewing an
5	economics undergrad and asking that economics
6	undergrad, you know, to -- to come up with a
7	mechanism to link session 1 and session 2 so we can
8	remember a user's card, hopefully they will tell us
9	that they would use something to do with cookies.
10	Q Okay. But, again, you don't know how Google
11	uses them on the back end and whether Google
12	associates these two different cookie values that
13	are reflected in Exhibit 1.1 to your report,
14	correct? You did nothing to investigate that?
15	MR. WATKINS: Objection; compound, vague.
16	THE WITNESS: I think saying that I did
17	nothing to investigate, that is a strong statement,
18	because I have established here that the primary
19	mechanism for linking these two sessions does not
20	work anymore because the data flow is altered.
21	So I disagree with the latter part of your
22	question that says I did nothing. I think I
23	investigated what was at the core of this case here,
24	which is the cookie values. Now --
25	BY MR. McGEE:

Timestamps (right column):
- Line 5: 12:29:07
- Line 10: 12:29:20
- Line 15: 12:29:41
- Line 20: 12:29:57
- Line 25: 12:30:12

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1   Q   Did you ask --

2   A   -- could you remind me the first part of your

3   question, please? I'm sorry, I forgot.

4   Q   No. Let me ask this.

5   Did you ask anyone at Google whether any   12:30:18

6   cookie values have another identifier baked into

7   them?

8   MR. WATKINS: Objection; vague.

9   THE WITNESS: Baked -- I would need a more

10   precise technical explanation of what it means for   12:30:32

11   an identifier to be baked into another identifier to

12   answer this very precise technical question.

13   BY MR. McGEE:

14   Q   Sure. So if you have a cookie that might be

15   encrypted and when you decrypt the cookie, there is   12:30:45

16   another identifier within that cookie baked into it,

17   did you do any investigation of whether Google

18   employs that type of technology with cookie values

19   that are set on users' devices by Google?

20   MR. WATKINS: Objection; assumes facts not in   12:31:05

21   evidence.

22   THE WITNESS: I do not have access to

23   Google's encryption keys; hopefully that's evident.

24   So I did not try to decrypt any of the cookie values

25   that I observed through my using of Fiddler, if that   12:31:21

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1   makes sense.

2   BY MR. McGEE:

3   Q   Did you ask anyone at Google whether those --

4   any of the cookie values that you captured could be

5   decrypted to show a common identifier?   12:31:34

6   MR. WATKINS: Objection; vague.

7   THE WITNESS: So now you're imagining, what,

8   that -- are you telling me that, for instance, the

9   _ga cookie is an encrypted value? Because honestly,

10 from my professional experience, this doesn't look   12:31:53

11 like an encrypted value, but then, again, maybe you

12 know that's an encrypted value.

13 BY MR. McGEE:

14   Q   I'm just -- any of the cookie values, not

15 necessarily the ga cookie, but any cookie value.   12:32:06

16   Did you ask anyone at Google whether they

17 employed any technology or mechanism that would put

18 a second identifier into cookie values so that when

19 Google gets the cookies, it can associate the cookie

20 values if it so chooses?   12:32:23

21   MR. WATKINS: Objection; vague and assumes

22 facts not in evidence.

23   THE WITNESS: The easy answer is that I did

24 not speak to anyone at Google, so I did not ask that

25 specific question. I'm just trying to understand   12:32:41

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1   which cookie you have in mind and where encryption

2   appears. That's why I'm taking a bit more time

3   looking at the exhibits.

4   BY MR. McGEE:

5   Q   Okay. Well, if -- if you didn't do it, then,   12:32:55

6   I mean, that's just going to be a lot of questions

7   that have the same answer. So I appreciate that,

8   Dr. Zervas, but I'll go ahead and move on.

9   Are there any cookie settings that you

10   reviewed that would allow someone to delete their   12:33:11

11   private -- excuse me, to delete their private

12   browsing activity from Google?

13   MR. WATKINS: Objection; vague.

14   THE WITNESS: If you don't mind, before -- I

15   will answer this question happily. I wanted to add   12:33:26

16   something that just occurred to me, just to be

17   clear, because we're having a technical discussion.

18   Encryption and decryption is something that

19   happens at the back end. So as I discussed, I did

20   not -- the assignment -- my assignment here was not   12:33:44

21   about what happens at the back end. You asked me a

22   question about encrypting and decrypting things.

23   This is not something, you know -- and in Google's

24   case, that would happen at the back end.

25   BY MR. McGEE: 12:33:56

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1   Q   Okay. But if Google Analytics sets a cookie

2   on someone's device, Google Analytics could encrypt

3   that cookie before it's set on the device, correct?

4   A   Exactly, on the back end.

5   Q   Right. But when you describe -- we've --   12:34:14

6   we've talked about the back end, but I just want to

7   make sure that your understanding and description of

8   the back end is not necessarily when the cookie is

9   received. It could also be before the cookie is

10   placed on the device, correct?   12:34:27

11   A   All I'm saying is that I guess with --

12   specifically with respect to encryption, typically,

13   encryption requires a secret key. I'm guessing that

14   Google or any other company guards those keys

15   somewhere in the back end. So if Google wanted me   12:34:45

16   to receive some encrypted information, that it would

17   encrypt it on the back end. That's all I'm saying.

18   Q   Okay. And based on your analysis of the --

19   your -- okay. Let me ask you this.

20   You describe it in your report, but for the   12:35:03

21   benefit of those who have not read the report in its

22   entirety, what is a URL?

23   A   It's a long string of characters, singles and

24   numbers but has a few parts. Would you like me to

25   go over the relevant part of my report? Let me find   12:35:24

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1   it.

2   Q   Sure. And while you're looking for that, I'm

3   sure you can -- and tell us, but what does URL

4   actually stand for?

5   A   Uniform resource locator.   12:35:36

6   Q   Okay. And if you could just tell us where

7   you speak about that in your opening report so that

8   we can all follow along.

9   A   It's somewhere near the beginning, I believe.

10   Let me scroll from the beginning. If -- Mr. McGee,   12:35:56

11   page 13, there is a screenshot of URL for Wikipedia.

12   Q   Okay. And --

13   (Simultaneous speaking - unreportable.)

14   BY MR. McGEE:

15   Q   -- this is where you -- this is where you   12:36:10

16   begin the description of URLs. It's, I think,

17   paragraph 31 of your opening report?

18   A   That's correct. And then it continues, I

19   believe, for a paragraph or two.

20   Q   Okay. And when you look at a URL, are you   12:36:23

21   able to determine what information is in that long

22   string of characters, based on that review?

23   MR. WATKINS: Objection; vague.

24   THE WITNESS: When I look, for instance, at

25   the URL in Figure 2, I know this is a Wikipedia URL.   12:36:45

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1   And, you know, this happens to be pretty easy to

2   understand. It's a webpage, a Wiki page that talks

3   about the Internet.

4   BY MR. McGEE:

5   Q   Okay. And have you ever seen in a URL   12:36:57

6   that -- perhaps you click a news article from one

7   website -- takes you to another website, that there

8   is a large complex string of characters that follow

9   the basic URL that you highlight here on page 13 of

10   your report?   12:37:15

11   Have you ever come across those, the more

12   complex URLs that have the complex string of

13   characters after them?

14   A   A complex string of characters. So I think

15   there's only a very -- sort of a kind of limited   12:37:28

16   subset of characters allowed. But I think what

17   you're getting at is long URLs that contain more

18   than Wiki Internet and they have other URL

19   parameters.

20   I -- I think that's what you're getting at.   12:37:42

21   And I do provide an example somewhere in my

22   appendix. We can look at one of these. Let me take

23   a quick look --

24   Q   Please. Thank you.

25   A   -- because I think that's what you have in   12:37:54

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1   mind. Let's see here.

2   Okay. So can I please point you to page D-4,

3   so Appendix D, page 4 --

4   Q   Okay.

5   A   -- paragraph 8.   12:38:21

6   Q   Sure.

7   A   And it continues on D-5. I think that's what

8   you have in mind, right? Sort of the colorful stuff

9   that you see in this URL, that's what would count as

10   a long and complex URL in your example?   12:38:33

11   Q   Right. So you see that in paragraph 11 of

12   D-5, if a URL parameter with value, that large

13   string of characters --

14   A   Yeah.

15   Q   -- those are the values that I'm talking   12:38:50

16   about.

17   So from looking at the URL, are you able to

18   determine what identifiers Google is sending?

19   MR. WATKINS: Objection; vague.

20   THE WITNESS: I am not sure what you mean by 12:39:05

21   Google is sending. So typically, a URL encode, so

22   to speak, a request to Google, so you're asking what

23   Google is sending back to the user?

24   BY MR. McGEE:

25   Q   Or what the user might be sending to Google   12:39:20

                                              Page 103

1   with, for example, the -- like a GCLI ID, a G click

2   ID.

3   A   The URL contains what it contains. So the

4   information that you see here in this example would

5   be ultimately visible. In this particular case, not   12:39:42

6   Google, but The New York Times, because this is a

7   New York Times URL. But if it was Google, it would

8   work no differently. So that URL as is arrives at

9   the intended website.

10   Q   Okay. But in the URL, are identifiers being   12:39:58

11   passed?

12   MR. WATKINS: Objection; vague.

13   THE WITNESS: Can you define what you mean by

14   identifier?

15   BY MR. McGEE: 12:40:16

16   Q   A zwieback identifier, a biscotti identifier,

17   a GIA identifier -- any identifier that Google would

18   use that would allow a user to be identified.

19   A   I have not come across -- if you want to show

20   me a specific URL and we can analyze its components,   12:40:41

21   that -- that would be fine. But, for instance, when

22   I look at this New York Times URL, I don't see

23   any- -- anything that is -- that was an identifier.

24   The closest thing I can see, you pointed me

25   to paragraph 11, that long string of numbers, you   12:40:57

1   might call that an identifier, maybe. I'm not sure.

2   Q   Well, let's go with that. Let's consider it

3   an identifier if it's in the URL.

4   A   Well, if it's in the URL, it doesn't

5   necessarily make it an identifier. That was my   12:41:23

6   point about The New York Times URL, but...

7   Q   Sorry. I'm trying to find if you've got one

8   in your report.

9   So, Dr. Zervas, based on a review of the URL,

10 are you able to determine what identifiers are being   12:41:52

11 passed from a user's device back to Google?

12   A   I can see the entire contents of the URL. So

13 whether something is an identifier or not an

14 identifier or whatever you might wish to call it, I

15 can see that. So URLs, let's -- okay. Let's take a   12:42:12

16 step back to establish a bit of common language,

17 because I think it might be helpful.

18   Q   Thank you.

19   A   Following the question mark, do you see that

20 long complicated string? That's called a query   12:42:23

21 string. And then you might be able to notice that

22 it has a specific structure, which is X equals Y,

23 and then this sort of, like, valuable names and

24 valuable values are separated by ampersands. That's

25 how you should mentally parse that.   12:42:48

1   Q   Okay. That's helpful.

2   A   That's how I did it in my work. So I can see

3   those values being communicated back and forth. And

4   this is one place where I look for cookie values for

5   my exhibits.   12:43:00

6   Q   Okay. And with the benefit of the ampersand

7   separating the values in the URL string, can you

8   tell me, based on a review of that URL string, what

9   Google identifiers are being passed between the

10   user's device and back to Google?   12:43:17

11   A   Anything that is contained in a URL is -- by

12   necessity of the technology, passed the website,

13   whether it's Google or something else.

14   Q   Okay. But can you tell me with specificity

15   what identifiers are actually being passed, just on   12:43:38

16   a review of the URL with the benefit of the

17   ampersands as separators?

18   A   If you showed me a specific URL -- and we can

19   do this with The New York Times -- I will tell you,

20   okay, one variable is called plat, p-l-a-t, because   12:43:53

21   of the value web and so on and so forth. That's how

22   I would respond to that question.

23   Q   Right. So plat might be the platform that --

24   that is accessing the website, whether it's a

25   computer, a mobile device, a tablet, it might help   12:44:08

1   the website inform that, right?

2   A   I agree with your guess. I would guess the

3   same.

4   Q   Okay. Yeah. I think at the break, what

5   we'll do is I'll get you a URL that I'm -- that I'm   12:44:21

6   thinking of, and I'll get that over lunch so that we

7   can do that.

8   But I guess you're saying without the benefit

9   of seeing the URL, you can't tell me whether

10   identifiers are being passed without actually   12:44:37

11   analyzing a URL, correct?

12   A   I --

13   MR. WATKINS: Objection; mischaracterizes

14   testimony --

15   Sorry.   12:44:51

16   Objection.

17   THE WITNESS: I did not say that, but we're

18   having a complex discussion, so let me try to

19   clarify.

20   I think my initial statement was that   12:44:58

21   anything contained in a URL is passed by technical

22   necessity to the website that they're communicating

23   with, whether it's New York Times, Google or

24   anything else.

25   A subset of that it might be so-called   12:45:15

1   identifiers. Where I have some confusion is what

2   you call an identifier because we have not seen an

3   example. But if something is in the URL, whatever

4   you want to call it, that's going to be passed to

5   the website in question.   12:45:36

6   BY MR. McGEE:

7   Q   Okay. I guess my question --

8   (Simultaneous speaking - unreportable.)

9   THE WITNESS: I -- I'm sorry. Go ahead.

10   BY MR. McGEE: 12:45:43

11   Q   No. Please, I didn't mean to interrupt you.

12   A   And that answer, it would not change if you

13   showed me a different URL. That's all I wanted to

14   say.

15   Q   Okay. So, again, reviewing the URL, if   12:45:52

16   there's an ampersand and let's say it says gclid=

17   and there's a long string of characters, if you

18   looked at that, could you tell me what a GCLID is?

19   A   If I had no other knowledge and you just --

20   let me give you an example. I cannot tell you this 12:46:12

21   New York Times URL what mc is. And plat we just

22   guessed, right? So --

23   Q   Right.

24   A   -- by the same token, unless I read some

25   documentation, it would be an educated guess or an   12:46:24

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1   uneducated guess depending on the circumstance.

2   Q   Okay. So, basically, without a cipher, you'd

3   be unable to determine exactly which identifiers are

4   being passed by just examining the URL, correct?

5   MR. WATKINS: Objection; vague,   12:46:41

6   mischaracterizes testimony.

7   THE WITNESS: I don't think I used the word

8   "cipher" ever. I'm not sure how you're using it.

9   Maybe you could --

10   BY MR. McGEE: 12:46:53

11   Q   Maybe a key that might say GCLID is and then

12   formally what it's called. For example, a Google

13   click ID or sometimes Facebook may embed certain IDs

14   and it will have an amper sign, and there may be a

15   short -- few characters that would relate to what   12:47:14

16   the Facebook click ID would be or any other kind of

17   an analytics ID.

18   But -- so you're -- you're telling me that

19   without the benefit of a chart or some other

20   document that would explain the shorthand or -- or   12:47:27

21   what the shorthand means, you would not be able to

22   tell me what every identifier would be in the URL.

23   You could not identify them without some other

24   documentation that would help explain what the

25   shorthand means?   12:47:44

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1   MR. WATKINS: Objection; vague.

2   THE WITNESS: I think, first of all, what I'm

3   saying is that I -- they do not understand the

4   distinction between what counts as an identifier and

5   a non-identifier in a URL, so just to be clear.   12:47:56

6   I think I'm also saying that anything that

7   belongs in that URL, whether it's Google or The

8   New York Times or any other site, is going to be

9   communicated to the website in order to provide back

10   a response and render a webpage.   12:48:12

11   Beyond that, you're asking me again -- I

12   think what you're getting at is maybe back-end

13   stuff, so --

14   BY MR. McGEE:

15   Q   No. And if I can -- I'll focus you. Is --   12:48:27

16   so what you're saying is when you look at a URL --

17   so, for example, we had the "and plat" example.

18   We're taking a guess at what that is. It's an

19   educated guess, it's a hypothesis, but we're taking

20   a guess at what that is.   12:48:43

21   But when you look at the URL and you see

22   &mc=, you don't know what that means, right?

23   A   Just looking at that, no. I have -- no, I do

24   not know what mc means in that URL.

25   Q   So you don't know if mc could be an   12:48:56

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1   identifier, correct?

2   A   Yes, but I don't know, because we have not --

3   we have not defined what an identifier is. If -- if

4   you told me that an identifier is something that

5   contains five numbers and ends in two Xs, then, you   12:49:12

6   know, I would look at the value of that regardless

7   of the name of the barometer and I would say, okay,

8   by Mr. McGee's definition, that's an identifier.

9   Q   Well, let me ask you, what do you understand

10 an identifier to be in web development?   12:49:27

11   MR. WATKINS: Objection; vague.

12   THE WITNESS: It's -- this is -- it could be

13 many things, so --

14 BY MR. McGEE:

15   Q   Well, let me draw you -- I think in your   12:49:41

16 report, you talk about PPIDs, publisher-provided

17 identifiers.

18   A   I do.

19   Q   Okay. In a URL, are you able to determine

20 what PPID is being passed just by examination of the   12:49:54

21 URL?

22   A   I understand your question. Let me go back

23 to my PPID sections here.

24   Q   And let's go -- yeah, just let me know which

25 portion of the report that is. It may be in your   12:50:15

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1   rebuttal report, but I thought it was in --

2   A   It's in the rebuttal report, you're right.

3   Let me -- I think I did discuss it in my opening

4   report, as well, though. But, you know --

5   Q   Well, if it's in your opening report, let's   12:50:29

6   stick with that one.

7   A   Let's see. Yeah, give me one second. I will

8   not take too long.

9   Q   And I've just done a word search, Dr. Zervas,

10   and it looks like it does appear on page 76 if   12:50:44

11   that's helpful.

12   A   Yeah, yeah. I -- I do recall discussing it

13   in my opening report, so let's go there.

14   All right. Yes, perfect. So page 76, it

15   says (as read):   12:51:01

16   "Developers also have a choice of

17   whether or not to send publisher

18   provided identifiers," which stands

19   for PPID -- which PPID stands for --

20   "which are used for ad frequency   12:51:10

21   capping, audience segmentation, and

22   other delivery controls across devices."

23   Q   Okay. And the PPID is passed over the URL,

24   correct?

25   A   I hesitate because I do not recall if it's   12:51:26

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1   passed via the URL or via the cookie. That's -- I

2   have some uncertainty right now about that, so I

3   don't want to make a definite statement.

4   Q   Okay. But if you saw -- and I know this is a

5   hypothetical, but stick with me.   12:51:39

6   If you saw in a URL the ampersand PPID equals

7   and a long string of characters, what would those

8   characters signify?

9   A   They could be anything, honestly, and I'll

10   tell you why. One interesting thing that I   12:51:59

11   discovered just from my professional experience --

12   as I told you, I have some experiences at Microsoft,

13   for instance. There is so much overloading of

14   names, that, Mr. McGee, I use PPID; then a year

15   later, they hire someone else for a different   12:52:14

16   project; they also create a critical PPID.

17   So, you know, if you're telling me that it

18   could be a publisher-provided identifier, maybe

19   that's something, you know, we can speculate about.

20   Q   Okay. But then -- I guess what you're saying 12:52:29

21   is you'd have to then go speak with someone at

22   Google or at Microsoft to appreciate what that

23   shorthand ampersand PPID equals actually relates to.

24   Is that fair?

25   A   Not for the purposes of my report, no. I   12:52:46

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1   don't need to speak to anyone at Google or Microsoft

2   to understand what PPID is.

3   Q   But you just said that if someone at

4   Microsoft is using the PPID coding one year and then

5   that changes, it could go to something totally   12:53:02

6   different, and you don't know that unless you speak

7   with them, correct?

8   A   I --

9   MR. WATKINS: Objection --

10   THE WITNESS: I'm sorry. Go ahead.   12:53:11

11   MR. WATKINS: Objection; calls for

12   speculation.

13   THE WITNESS: Not for the purposes of my

14   report. Nothing I have done here meets, as a basis,

15   this piece of information. I want to be clear about   12:53:21

16   that. So --

17   BY MR. McGEE:

18   Q   Right, because in your report --

19   (Simultaneous speaking - unreportable.)

20   THE WITNESS: Go ahead.   12:53:29

21   BY MR. McGEE:

22   Q   I apologize. I did not mean to speak over

23   you, Doctor.

24   A   I am done. I wouldn't -- it's fine.

25   Q   Right, because your report looks at how --   12:53:35

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1   with the values -- before they go to the back end,

2   how they can be associated, but you don't know how

3   they're associated after they go to Google's back

4   end. And that's the whole scope of your report,

5   correct?   12:53:54

6   MR. WATKINS: Objection to the extent it

7   mischaracterizes testimony or the report.

8   THE WITNESS: That's not the whole scope of

9   my report there --

10   (Simultaneous speaking - unreportable.)   12:54:05

11   BY MR. McGEE:

12   Q   Did the scope of your report at all concern

13   what happens with Google's back-end processing of

14   the data?

15   A   I think as we discussed in our prior segment, 12:54:18

16   first of all, I believe there is another expert

17   employed by Google who I think is attacking those

18   topics that you have in mind.

19   The scope of my report is to understand the

20   data flows between browsers and Google when users   12:54:35

21   visit other non-Google sites, like The New York

22   Times, in incognito or regular browsing modes.

23   Q   Okay. Doctor, if you could turn to page 83

24   of your report.

25   A   I am there, Mr. McGee.   12:55:11

1   Q   Do you see footnote 155?

2   A   Yes, I do.

3   Q   There's a URL here, and it's

4   "https://static1.squarespace.com/static/" and a long

5   string of characters that I am not even going to try   12:55:33

6   to read into the record.

7   Can you tell me what those characters mean?

8   A   I don't think they have any meaning in the

9   English language, so...

10   Q   Can you tell me what they might relate to   12:55:49

11   based on your review of that URL.

12   A   What -- what they relate to? I mean, yes, I

13   can tell you that it's a URL, and this is, you know,

14   a unique mapping from that URL to that document that

15   I cite, the Flashtalking cookie rejection report.   12:56:15

16   Q   Okay. Is it --

17   A   I guess what I'm trying to say is that -- let

18   me put it this way. I think that's going to be a

19   nice use of this example. It doesn't have to have

20   meaning, right? So -- a URL; it might or might not   12:56:35

21   have meaning. So we saw the Wikipedia URL that --

22   kind of like you look at it and you can guess that

23   it's a page about the Internet.

24   Here, as well, you can deduce that it's

25   something about cookie rejection and maybe   12:56:46

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1	something, you know, written in 2020. It's preceded	
2	by some numbers. What this could be -- so I do have	
3	an educated guess of what this might be. This could	
4	be a folded structure on the web server. And why do	
5	I say that?	12:57:04
6	Do you see how there are these forward	
7	slashes? You often see this -- let's say you're	
8	using windows, okay, that would be a backslash on	
9	windows, but, you know, when you navigate the folder	
10	and it's part of some hierarchy, this is how folders	12:57:16
11	are separated.	
12	So typing this URL or copy/pasting -- because	
13	nobody would type this thing -- this URL into the	
14	browser would direct the web server to look into the	
15	folder static and then it would look into the folder	12:57:28
16	5c -- and, again, just like you, I'm not going to	
17	read the rest, and so on and so forth to not bore	
18	you by going down the URL.	
19	Now, why does the folder structure have these	
20	weird names? Again, based on my professional	12:57:47
21	experience, sometimes you need to create unique --	
22	but I say that with a bit of hesitation, like with	
23	some guarantees, like likely unique names for things	
24	so that there aren't collisions.	
25	So imagine that I want to upload something on	12:58:02

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1   your website, Mr. McGee, and you want to avoid the

2   case that it's -- you know, over- -- overwrites an

3   existing document with the same name. You might

4   just generate, you know, a long string of random

5   characters and name my document that and that would   12:58:16

6   avoid overwriting an existing document.

7   So this might be a folder structure like

8   that. That's -- that's sort of, like, the most I

9   can tell you by looking at that URL.

10   Q   Okay. How about we turn to page 25 of your   12:58:28

11 opening report.

12   And I know we're getting close to lunch so

13 I'll respect that, but I -- I would like to finish

14 this line of questioning, please.

15   A   That's fine by me.   12:58:43

16   Q   Do you see that page, Dr. Zervas?

17   A   I just arrived at that page.

18   Q   Okay. Do you see footnote 43?

19   A   I do.

20   Q   See the URL that's expressed there for the   12:58:57

21 Microsoft support and it has the -- I'll read the

22 last part (as read):

23   "browse-inprivate-in-microsoft-

24   edge-cd," and then that long string of

25 numbers.   12:59:16

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1   Do you know what that long string of numbers

2   is that is after the dash from Edge?

3   A   For a fact? No, I do not. But I imagine it

4   serves a similar purpose to what we described

5   before. You know, if someone else wanted to -- it   12:59:32

6   seems to me -- and, again, this is speculation --

7   that this browse in private in Microsoft Edge, the

8   way that part of the URL was generated, it's

9   obviously from the title, right? You see how the

10   quoted title is "Browse InPrivate in Microsoft   12:59:49

11   Edge"?

12   So what did they do? They took the title;

13   they made it lowercase. They removed spaces because

14   these are not nice to have in a URL and they

15   replaced them with dashes. And then they appended a   01:00:03

16   long string of stuff that we're not going to read.

17   Again, my speculation might be that they did

18   that because if another person, you know, later on

19   happens to write an article with the same title --

20   and this might be unlikely for this, you know, very   01:00:20

21   specific article.

22   But you can imagine articles

23   like -- on Wikipedia like "Internet," you know, they

24   append something to make it, you know, not collide

25   with an article that might have the same title.   01:00:30

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1   Q   Okay. Were you provided a list of all

2   identifiers that Google implements with Google

3   Analytics?

4   A   Again, I'm not sure -- we still have not

5   defined the term "identifiers," but I do not recall   01:00:49

6   seeing such a list that might resemble what you're

7   referring to.

8   Q   What about for Google Ad Manager? Were you

9   provided any list -- comprehensive list of the

10   identifiers?   01:01:06

11   A   Many of these identifiers, as I recall it --

12   and, again, I reviewed a lot of public documentation --

13   are in public documentation.

14   So, for instance, if I recall correctly --

15   you said provided by Google. Okay. Indirectly, for   01:01:20

16   public documentation, maybe my answer should have

17   been yes. But, you know, I think _ga is explained,

18   if I recall correctly, in public documentation and I

19   think other cookies, as well -- sorry, other URL

20   parameters in cookies are explained in public   01:01:37

21   documentation that I reviewed.

22   Q   Okay. But did you ask for a list of all of

23   the potential URL parameters that might be passed

24   through Google analytic communications?

25   A   I did not perform such a request.   01:02:03

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1   Q   And why not?

2   A   Because it was not necessary to provide the

3   bases for the opinions that I offer in this

4   report -- in these reports. I'm sorry.

5   MR. McGEE: Okay. Is now a good time to   01:02:20

6   break for lunch?

7   THE WITNESS: Yes. It stopped raining

8   outside, so yes.

9   MR. McGEE: Well, that's good. We can go off

10   the record if that's good with your counsel.   01:02:30

11   MR. WATKINS: That works.

12   THE VIDEOGRAPHER: We're going off the

13   record. This is the end of media unit 3. The time

14   is 1:02 p.m.

15   (Lunch recess.)   01:37:20

16   THE VIDEOGRAPHER: We are going back on the

17   record. This is the beginning of media unit 4. The

18   time is 1:45 p.m.

19   MR. McGEE: Okay. Dr. Zervas, during the

20   break, I found a URL that I'd like to talk about.   01:45:10

21   Let me add the stamp. It will be Zervas 4 for the

22   deposition. Introduce.

23   (Exhibit 4 was marked for identification

24   and is attached hereto.)

25   BY MR. McGEE: 01:45:29

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1   Q   Please let me know when you have that in

2   front of you.

3   A   I will. I'm reloading. Okay. I can see

4   that URL exemplar.

5   Q   Yeah. So that's marked as Exhibit 4.   01:45:42

6   In this URL, you see -- is a delimiter a good

7   way to describe that ampersand, or is there another

8   term of art that you would use in the URL?

9   A   I use exactly the same. That's great.

10   Q   This economics undergrad, he's getting it.   01:45:58

11   So I -- I looked through this URL during the

12   break. And I believe there are 17 delimiters or

13   ampersands that sit in the URL. And this is a URL

14   where if you click an advertisement on the The

15   New York Times, this is the URL that you'd be   01:46:24

16   directed to.

17   So my first question is, the first ampersand

18   has the -- or excuse me, the first delimiter is the

19   &ai=. It's on the first line.

20   Do you see that?   01:46:38

21   A   I do.

22   Q   And what does that mean?

23   MR. WATKINS: Objection; vague.

24   THE WITNESS: What does ai mean?

25   BY MR. McGEE: 01:46:54

                                                   Page 122

 1   Q   Yes, sir. What does the -- the ai=, what is

 2   that value?

 3   A   It's probably the name of a variable.

 4   Q   Do you know what the variable is?

 5   A   No, I do not. I think I do not.   01:47:05

 6   Q   Okay. And the next one is an ampersand with

 7   num. If you can locate that, and I will --

 8   A   I'm sorry. I'm looking.

 9   Q   -- represent to you that --

10   A   Oh, it's broken in two lines, right? So &nu, 01:47:28

11   and then in the next line m=1. I see that.

12   Q   Yes, sir. Do you know what that &num= value

13   is?

14   MR. WATKINS: Objection; vague.

15   THE WITNESS: When you say what it is, I know 01:47:48

16   what it is. It's part of the query string. It's a

17   URL parameter, yes.

18   BY MR. McGEE:

19   Q   Okay. Do you know what that URL parameter

20   represents?   01:47:56

21   A   Where?

22   Q   The end -- the &num=1, looking at that --

23   (Simultaneous speaking - unreportable.)

24   BY MR. McGEE:

25   Q   -- URL, do you know what that means?   01:48:08

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1   A   I wasn't clear. I apologize for interrupting

2   you, as well. I meant in what context?

3   Q   I'd like to provide the context, but I'm not

4   sure how you need further clarification.

5   A   I guess my answer would be, it's a URL   01:48:29

6   parameter. The name of the variable is num. Maybe

7   this stands for number; I don't know. And the value

8   is 1.

9   Q   Okay. The next one right after that is

10   &cid=.   01:48:48

11   Do you see that?

12   A   I do.

13   Q   And do you know what a cid= value is?

14   A   My answer would have to be the same. Beyond

15   the fact that it's a URL parameter that's named cid   01:49:03

16   and has that specific value, from what you're

17   showing me, I cannot tell you much more.

18   Q   Okay. And the next one is &sig=, and then a

19   string of characters after that.

20   Do you see that?   01:49:22

21   A   I do.

22   Q   And do you know what that variable means in

23   that URL string? Do you know what that represents?

24   A   I'm sorry. Again, my answer would have to be

25   the same. Beyond the obvious fact that it's a URL   01:49:39

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1   parameter with the name sig and that long value,

2   anything else I'd say would be just a guess or

3   speculation just based on that one URL.

4   Q   Okay. And on the same line, there's an

5   &client=.   01:50:01

6   Do you see that?

7   A   I see that.

8   Q   And do you know what that UR- -- or what that

9   parameter of the URL is used for or what it means?

10   A   My answer would have to be the same apart   01:50:17

11   from the fact that the word "client" has a meaning

12   in the English language, so it makes it slightly

13   clearer than cid or sig. But without speculating

14   further, I wouldn't know more about that.

15   Q   Okay. In the next line, there's an &nx=.   01:50:35

16   Do you see that?

17   A   One second. I got lost.

18   Ny -- oh, nx=CLICK_X.

19   Q   Yes, sir.

20   A   Uh-huh, I see that.   01:50:54

21   Q   Do you have any idea what that parameter

22   within this URL is used for or what it means?

23   A   I -- the -- I'm struggling a bit, because

24   asking what a variable means in general is not a

25   question that one might ask in the context of   01:51:13

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1   reviewing something. How it's further used in the

2   back end down the line, this is not -- I have to

3   investigate.

4   I don't know if this is a URL that you got

5   from my backup production or one of yours. But   01:51:29

6   either way, this is not something I had to

7   investigate to form the conclusions of my report.

8   Q   Okay. And if we can just briefly walk

9   through the rest of the variables -- or excuse me,

10   the rest of the parameters that are expressed in   01:51:46

11   this URL.

12   Do you know what the &ny value is right after

13   that?

14   A   Again, my response would have to be the same.

15   And just to be careful, I do not know how this is   01:52:00

16   further used once it's communicated to the domain

17   that it's communicated in the back end.

18   Q   Okay. And would your answer be the same for

19   the remaining data parameters that are expressed in

20   this URL that are, again, expressed with the amper   01:52:17

21   sign -- or excuse me, ampersand delimiter?

22   A   The answer is yes. I might have a slightly

23   less speculative guess for the last one. That's

24   all.

25   Q   And that's the adurl?   01:52:39

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1   A   Yeah. If you made me guess, I would say that

2   this is an ad either on Fliteboard or to Fliteboard,

3   you know, something like that.

4   Q   Okay. But even with the benefit of that URL

5   being expressed as a parameter within this greater   01:52:59

6   URL, you don't know if I clicked an ad on

7   fliteboard.com or if this was an advertisement for

8   fliteboard.com, correct?

9   A   I think because this is a Google URL, I'm

10   pretty confident but not a hundred percent sure that   01:53:21

11   this is an ad that directs you to fliteboard.com.

12   That's my guess.

13   MR. McGEE: Okay. And I'm going to introduce

14   what I will mark as Exhibit 5.

15   (Exhibit 5 was marked for identification   01:53:41

16   and is attached hereto.)

17   BY MR. McGEE:

18   Q   Dr. Zervas, if you can refresh your page and

19   let me know when you've got that exhibit in front of

20   you.   01:54:04

21   A   I see "Zwieback ███████████."

22   Q   That's correct, sir. So you have that

23   document in front of you?

24   A   I do, thank you.

25   Q   Okay. If I can draw your attention to the   01:54:18

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1   second page which will have the Bates label at the

2   bottom GOOG-CABR-03664109.

3   Do you see that page?

4   A   I do see that page.

5   Q   Do you see the term "█████████████"   01:54:35

6   that's bolded?

7   A   One second. Yes. In the glossary, right?

8   Q   Yes, sir.

9   A   I do.

10   Q   And would you please read the words that are   01:54:46

11   reflected on the page after the term "██████

12   ██████."

13   A   Certainly. It says (as read):

14   "████████████████████

15   ████████████████████,"   01:54:59

16   full stop. "(██████████████

17   ██████████████ for a full

18   treatment of this subject)."

19   Q   And, Dr. Zervas, in your work on this case,

20   did you ever investigate whether zwieback cookies   01:55:18

21   have████████████████████████████

22   the ██████████████, that Google might use on the

23   back end?

24   MR. WATKINS: Objection; vague.

25   THE WITNESS: I just want -- if you don't   01:55:48

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1   mind, I will answer your question, but I only had a

2   chance to look at that excerpt that you asked me to

3   read.

4   Do you mind if I review it a bit more

5   closely?   01:56:01

6   MR. McGEE: Not at all, Doctor. And take all

7   the time you need.

8   THE WITNESS: Thank you. I had to look at

9   least in the beginning to understand the context of

10 the document.   01:57:09

11   So do you mind repeating your question -- I'm

12 so sorry -- just so that I answer it accurately?

13 BY MR. McGEE:

14   Q   No, I don't -- I don't remind -- excuse me.

15 I don't mind.   01:57:16

16   What I was asking is whether you investigated

17 anything having to do with the zwieback cookie and

18 whether ███████████████████████████████ is used

19 by Google on the back end after receiving it.

20   MR. WATKINS: Objection; vague.   01:57:29

21   THE WITNESS: Again, as a matter of the scope

22 of my assignment, I did not investigate what happens

23 in the back end with the cookie values that I've

24 transmitted that I analyzed -- the data flows that I

25 analyzed in my report, including the zwieback   01:57:48

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```
 1    cookie.

 2          Now, one thing that gives me pause with

 3    respect to the document that you are showing me is

 4    that it says on the top "Status:  Evolving," and it

 5    was created, what is it, roughly three and a half    01:58:07

 6    years ago and then updated again a few months after

 7    that.  So I'm not sure if this document has changed,

 8    if it still speaks to my analysis.

 9          But that particular aspect of it, what

10    happens in the back end was outside the scope of my   01:58:26

11    work in this case.

12    BY MR. McGEE:

13       Q   Okay.  May come back.

14          Dr. Zervas, are there any Java settings -- or

15    excuse me.                                            01:58:46

16          Are there any JavaScript extensions that

17    would allow someone to delete their private browsing

18    activity from Google servers or storage?

19       A   I frankly did not see the technical

20    connection between the two topics you discussed.     01:59:02

21    JavaScript settings where?

22       Q   On a user's device.

23       A   Well, the -- we could open Chrome, and the

24    JavaScript settings are there, but --

25       Q   Right.  Will -- will any of those JavaScript  01:59:20
```

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1   settings cause private browsing data to be deleted

2   from Google's storage?

3   A   Can you remind me again what your definition

4   of private browsing data is.

5   Q   Any activity that I would conduct after   01:59:36

6   choosing to go incognito or any of the equivalence

7   on other browsers.

8   A   So I think that at least briefly or maybe in

9   detail -- let me remember -- in my rebuttal report,

10   because I think Mr. Hochman suggests a procedure   01:59:58

11   like you described -- well, not related to

12   JavaScript. To be honest, JavaScript seems like

13   kind of not related to the rest of the questions,

14   but let's go with that, JavaScript settings.

15   So let me find -- let me point you to my   02:00:15

16   report and see if that answer your questions. I

17   think it does.

18   Q   And which report are you referring to,

19   Dr. Zervas?

20   A   I will point you. Right now, I'm scanning my   02:00:35

21   rebuttal report for the appropriate section, and I

22   will point you to the appropriate section in just

23   one minute.

24   Q   Thank you.

25   A   Thank you for your patience. So I see here   02:01:07

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1   in my report "Zervas Rebuttal Opinion 14 (See

2   Section" -- Roman numeral "IX.C." I discuss

3   Mr. Hochman's -- the part of Mr. Hochman report --

4   Mr. Hochman's report that relates to the option to

5   request deletion of private browsing mode data.   02:01:29

6   And I see in paragraph 128, provides some

7   context that Mr. Hochman -- am I reading the correct

8   thing? Yes (as read):

9   "Mr. Hochman argues that 'based on

10   my own experience as a Chrome user,   02:01:48

11   and as confirmed by Halavati, Google

12   does not give users the option to

13   delete this data," which I think is exactly

14   the same data that you are referring to, any data

15   communicated during private browsing.   02:02:00

16   And I critique -- I provide some critique of

17   Mr. Hochman's assumption. And one of the things

18   that I note is that Mr. Hochman incorrectly assumes

19   that Google can identify specific users associated

20   with browsing data when no such link might exist.   02:02:17

21   And, in fact, then I know that it's precisely

22   because cookie values from private browsing sessions

23   in which the user does not sign into a Google

24   account cannot be used as a link to the user or her

25   device after the session is closed, that the users   02:02:38

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1   are not able to delete such activity.

2   Q   Dr. Zervas, if I can ask you, do you know how

3   cookie values -- or excuse me.

4   Do you know how this private browsing data

5   that you've just referenced from Mr. Hochman's   02:02:54

6   report is stored at Google? Do you have any insight

7   into how Google stores or keys or -- keys that

8   information?

9   A   I speculate they use databases to store the

10   information.   02:03:11

11   Q   Okay. It --

12   (Simultaneous speaking - unreportable.)

13   BY MR. McGEE:

14   Q   But it would be speculation, right?

15   A   Then let me be more precise and avoid   02:03:13

16   speculation. Again, to rebut the specific opinions

17   that I rebut for Mr. Hochman's report and to offer

18   the opinions in my affirmative report, it was not

19   necessary for me to know what technology Google uses

20   to store any data that it might store, including   02:03:36

21   questions that we discussed before regarding the

22   retention or deletion of such data after certain

23   amount of time.

24   Q   Right. Dr. Zervas, I -- I understand that to

25   form your opinions you didn't, but you criticized   02:03:49

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1	and you made certain opinions on linkability. So my
2	question is, do you know how private browsing data
3	is stored at Google? For example, do you know if it
4	is keyed by IP address and user agent string?
5	MR. WATKINS: Objection; vague, assumes facts 02:04:11
6	not in evidence.
7	THE WITNESS: I want to be precise about my
8	own opinions. You said that I made certain
9	statements in my report regarding linkability. And
10	the precise statement that I make is that cookie 02:04:26
11	values from regular mode sessions are different or
12	in some cases absent to incognito sessions.
13	Thus, to use your terminology, those cookie
14	values, which is what I see flowing back and forth,
15	right, cannot be used as a key, as you said, to link 02:04:49
16	these two activities. That's the precise statement
17	I made with respect to linkability.
18	BY MR. McGEE:
19	Q But did you do any research to see if there
20	are identifiers that are embedded into those cookie 02:05:03
21	values? For example, like we just saw in the latest
22	exhibit, the zwieback ███████████████ , did you
23	do any investigation to see that even though the
24	cookie value you see going across with Fiddler
25	doesn't have some value encrypted into it or 02:05:22

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1	otherwise embedded into it, that Google is able to
2	use to say, okay, it looks like cookie value 1, it
3	looks like cookie value 2, but when you actually run
4	it through Google systems, there are identifiers
5	embedded within that that would match up?
6	Did you do any investigation to look into
7	whether that occurs at Google?
8	MR. WATKINS: Objection; form, compound and
9	assumes facts not in evidence.
10	THE WITNESS: There are a few parts to your
11	question. I think we discussed the fact that I did
12	not have access to encryption or decryption. The
13	other part of your question is, what comes out when
14	you en- -- sorry, when you decrypt, something on the
15	back end?
16	And, again, I did not look at how these
17	values might be used in the back end. And the
18	specific analysis I did that pertains to linkability
19	is what I explained before, that these values are
20	different or absent in some cases.
21	BY MR. McGEE:
22	Q Okay. If I could take you to paragraph 43 of
23	your opening report, Dr. Zervas, which is Exhibit 1.
24	A Of course, yes. "Overview of Private
25	Browsing Mode," I see that.

Timestamps:
- Line 5: 02:05:42
- Line 10: 02:05:59
- Line 15: 02:06:15
- Line 20: 02:06:33
- Line 25: 02:07:06

1   Q   And in there -- in this paragraph, you state

2   that private browsing mode (as read):

3   "...is designed to conceal the

4   user's activity from other people

5   who may use the same device and to   02:07:12

6   prevent linking the user's browsing

7   activity in Private Browsing Mode

8   with the user's private" -- or

9   excuse me, "with the user's browsing

10   activity in Regular Mode."   02:07:23

11   Did I read that right, Dr. Zervas?

12   A   Yes. It starts with the word "instead," but,

13   yeah, the rest is correct.

14   Q   Is that activity concealed from Google?

15   MR. WATKINS: Objection; vague.   02:07:41

16   THE WITNESS: Which activity, Mr. McGee?

17   BY MR. McGEE:

18   Q   The user's activity that you reference here

19   in paragraph 43 in private browsing mode.

20   A   Is this activity visible to Google? Again, I 02:08:11

21   have a tendency to prefer to think about specific

22   examples, but certainly, you can go open an

23   incognito window and you might go to The New York

24   Times and there might be a Google Ad.

25   And obviously, you know, that activity will 02:08:28

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1   be -- you know, the Google Ad would communicate with

2   Google servers in order to bring back the ad.

3   So something like that is, at least for that

4   specific point in time, visible to Google so that it

5   can render the service that, you know, the website   02:08:44

6   developers installed on the site.

7   Q   Okay. And, Dr. Zervas, in your report, you

8   explore how cookie jars work between Chrome and

9   Safari.

10   Do you recall doing that?   02:09:00

11   A   I'm sorry. You will have to refresh my

12   memory. Between Chrome and Safari, is there a

13   specific section of the report I should be looking

14   at?

15   Q   The next page on paragraph 45 is what I'm   02:09:11

16   referencing.

17   A   Thank you. I managed to lose the page. I'm

18   sorry.

19   Q   It's on page 25 of your report.

20   A   Thank you.   02:09:27

21   So this is the Amazon example that you're

22   thinking of?

23   Q   Yes, sir.

24   A   Okay.

25   Q   So in this example, you say (as read):   02:09:35

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1   "If the user navigates away from

2   the retail website and then returns

3   to the website in the same Private

4   Browsing Session (for Safari within

5   the same tab), the item can still   02:09:52

6   appear in her cart based on the

7   stored cookie value, which is

8   available within the Private

9   Browsing Session."

10   Do you see that?   02:10:00

11   A   I see that.

12   Q   And does a cookie jar work differently in

13   Chrome's incognito mode compared with Safari's

14   private browsing mode equivalent?

15   A   At a high level, no. The cookie jar is a   02:10:13

16   place where you store cookies.

17   Q   Okay. For Chrome, does the cookie jar -- is

18   the cookie jar for Chrome's incognito mode shared

19   across tabs?

20   A   Yes.   02:10:28

21   Q   Is it shared across tabs in Safari?

22   A   I think it's complicated, so it may or may

23   not be. So, for instance, you know how you go to

24   some sites -- one example that comes to mind is

25   Airbnb, because I was looking for a booking   02:10:46

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1   recently, and you see a bunch of listings for your

2   intended travel dates and location. And then you

3   click on listings, and then they open automatically

4   in a new tab. So you have both the listing you're

5   looking at and the list of listings so you can go   02:11:00

6   back.

7   I -- as I recall it, at least in that

8   instance, cookies are shared between tabs for -- for

9   Safari, even private browsing mode. I would have to

10   look into it more specifically, but my recollection,   02:11:16

11   sitting here today, is that that sharing happens.

12   Q   Okay. But in your report, in paragraph 45,

13   Exhibit 1, you qualify the Safari being within the

14   same tab for this activity you're describing with

15   Amazon, visiting Amazon, moving away from Amazon in   02:11:30

16   the same tab and coming back to it.

17   So my question is, if someone visited Amazon

18   in one tab and then they opened in a subsequent tab

19   New York Times tab, did you investigate the way that

20   the cookie jar is shared between those two tabs, if   02:11:50

21   at all?

22   A   So in Safari, with one tab open visiting

23   Amazon and one tab open visiting New York Times, my

24   expectation is that this would be two different

25   cookie jars, if that makes sense.   02:12:13

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1   Q   Okay. But that expectation is not the same

2   for Chrome, correct?

3   MR. WATKINS: Objection; vague.

4   THE WITNESS: We can go back to the

5   disclosures made on this last screen and the related   02:12:31

6   pages, and I believe it answers your questions about

7   what expectations I should have of that behavior.

8   So we can look at screenshots, for instance.

9   Let me take a look.

10 BY MR. McGEE: 02:12:49

11   Q   So, Dr. Zervas, I'm just asking simply, does

12 it function the same way in Chrome incognito, or is

13 the cookie jar shared across all tabs?

14   A   Let's be careful. So my understanding is

15 that it's shared in -- sorry, in Chrome, it is   02:13:03

16 shared across incognito tabs belonging to the same

17 incognito session consistent with what is described

18 on the splash screen and maybe the "Learn" -- you

19 know how there is a "Learn more" link to learn more

20 about how incognito works? I believe that is   02:13:25

21 described -- exactly what you're asking is described

22 there.

23   Q   Sure. And did you investigate whether the

24 two cookie jars in Safari can share identifiers

25 across the cookie jars, or are they totally   02:13:43

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```
 1    independent?

 2        A    I did not perform a specific investigation to

 3    that regard.  So to be perfectly honest, I'm not --

 4    we would have to speak a bit more about what that

 5    investigation entails and whether second parts of it      02:13:58

 6    are covered by my existing analysis.

 7        Q    Dr. Zervas, if you can turn to paragraph 46

 8    of your opening report, and that's going to be on

 9    page 28 of Exhibit 1.

10        A    Thank you.  I am there.                          02:14:29

11        Q    I believe in this paragraph, you talk about

12    IP addresses not being masked.

13            Do you see that?  It might be on the next

14    page, 21.

15        A    I'm sorry.  No, I do not see that.  So let me    02:14:49

16    see.  Are we talking about page 2- -- okay.  I see.

17            So page 29, the bulleted item "A User's

18    External IP Address," that's what you're referring

19    to?

20        Q    Yes, sir.                                        02:15:01

21        A    I see -- thank you.  I see that.

22        Q    Asking generally in your experience, what use

23    would a website have with a user's IP address after

24    that user navigated away from the website?

25            MR. WATKINS:  Objection; vague.                   02:15:13
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1   THE WITNESS: It is a bit vague. I would --

2   I would like to ask for clarification.

3   What sort of user are you imagining?

4   BY MR. McGEE:

5   Q   An average --   02:15:31

6   (Simultaneous speaking - unreportable.)

7   THE WITNESS: There are security systems,

8   intrusion detection. I can imagine a million -- a

9   million users, honestly, like -- but they're like

10   kind of vague, and without context, it's hard to   02:15:41

11   describe.

12   BY MR. McGEE:

13   Q   Okay. Well, let's just say I visited The

14   New York Times, and The New York Times gets my IP

15   address because you've opined that that's kind of   02:15:52

16   how the web works. To send URL requests, you need

17   an address to go to and an address to come back to;

18   otherwise, it gets lost in the ether. Very crude

19   explanation of -- of your expertise.

20   But after I close the tab, what use does the   02:16:08

21   The New York Times have with my IP address?

22   A   The New York Times doesn't know when you

23   close the tab.

24   Q   Okay. So does The New York Times store my IP

25   address forever?   02:16:28

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1   A   We would have to ask The New York Times.

2   MR. WATKINS: Objection -- sorry. Objection;

3   vague and calls for speculation.

4   You can go ahead and answer, please.

5   THE WITNESS: Also, Mr. McGee, because you   02:16:42

6   said it yourself, that this is sort of, like -- and

7   I appreciate the brevity -- don't -- don't get me

8   wrong. We're discussing sometimes in high level,

9   crude terms.

10   When you say "my IP address," let's be a bit   02:16:52

11   careful, right? Because your IP address dates one

12   thing; the other dates another thing. There is not

13   necessarily such a thing as my IP address, let alone

14   the fact that an IP address can be shared by

15   multiple people.   02:17:13

16   So this sort of, like -- I understand why you

17   were using it, but I sort of want to clarify that

18   the "my" part before "IP address," this is something

19   we should be very careful about when using that

20   term, and I wouldn't use it that way.   02:17:28

21   BY MR. McGEE:

22   Q   Okay. Going back to the shared cookie jar

23   example amongst tabs, when you're in Chrome

24   incognito, can identifiers be shared across the tabs

25   in an incognito session?   02:17:43

                                                   Page 143

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 1        A    Again, we're talking slightly vaguely because

 2    we haven't defined identifiers, but I think it's

 3    enough for me to tell you that the cookie jar is the

 4    same; it's shared among the two tabs.

 5        Q    There's no restrictions between the tabs of      02:18:03

 6    sharing the cookie jar, correct?

 7              MR. WATKINS:   Objection; vague.

 8              THE WITNESS:   What sort of restrictions do

 9    you have in mind?

10    BY MR. McGEE:                                             02:18:14

11        Q    I don't have any particular example.  You've

12    said that it's the same cookie jar across the tabs,

13    so I'm just wondering if there's any kind of

14    restriction between the data that is in the cookie

15    jar when you're on tab 1 versus the data that is in    02:18:28

16    the cookie jar when you're on tab 2 in incognito.

17        A    Well, yeah, there is a restriction.  Let's be

18    specific.  Tab 1 and tab 2, they have to belong to

19    the same incognito browsing session, okay?  So if

20    that's what you were asking, that's a great             02:18:50

21    clarification to add.

22        Q    That I -- and I understand that

23    clarification.  So if it is the same browser

24    instance that has the tabs open all in the same one,

25    not different windows, is there any restriction        02:19:02
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1   between the tabs for the access to the cookie jar?

2   A   This is not something I was asked to analyze

3   as part of my assignment. But based on my

4   professional expertise, off the top of my head, I

5   don't -- I cannot think of any restriction as we   02:19:25

6   call it.

7   Q   Okay.

8   A   I understand that they would be using the

9   same cookie jar.

10   Q   Okay. And if we go to page 32 of Exhibit 1,   02:19:32

11   your report. If you look at that page, I'll have a

12   general question.

13   A   Of course. So Exhibit 1?

14   Q   Exhibit 1 is your -- I'm sorry. I'm --

15   I'm -- it's a legal thing. I'm asking about your   02:19:50

16   opening report. We've marked that as Exhibit 1.

17   A   I'm sorry.

18   Q   So I'm just asking you to turn to page 32 of

19   Exhibit 1. I know it's lawyers talking to

20   nonlawyers. It can get a little shuffled, but thank   02:20:01

21   you for -- for the clarification.

22   A   No problem. By now, I should be better at

23   this.

24   Okay. I am at page 32 of Exhibit 1, aka my

25   opening report.   02:20:17

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1   Q   I will assure you that even some seasoned

2   lawyers aren't -- aren't as well-versed in it, so no

3   worries, Dr. Zervas.

4   My question is, with Figure 12, the incognito

5   user notification page, did you review any prior   02:20:32

6   versions of this page for your opening report?

7   A   I believe in Appendix -- let's see. In

8   Appendix E, I discussed some testing with Chrome

9   version 81. I will give you some time to get to

10 that.   02:21:12

11   Q   E, as in --

12   A   Appendix -- it's Appendix E, so --

13   Q   I see it.

14   (Simultaneous speaking - unreportable.)

15   THE WITNESS: Thank you. In Exhibit 1.   02:21:27

16 BY MR. McGEE:

17   Q   So you tested prior versions of Chrome, the

18 M81 version, is what you're saying?

19   A   Yeah. It says here "Chrome version 81." You

20 see it in the headline of -- the title of the table?   02:21:42

21   Q   Thank you. I do.

22   A   I tried private browsing modes of Chrome, so,

23 you know, I -- even though I don't have a screenshot

24 and I do not recall the exact contents right now,

25 this is something that I encountered.   02:21:52

 1   Q   Did you review any historical pages of that

 2   "Learn more" hyperlink?

 3   A   Apart from Chrome version 81 that appears in

 4   my appendix, I did not do any testing with any other

 5   versions of Chrome.   02:22:07

 6   Q   Okay. But the -- that hyperlink of "Learn

 7   more" that appears on Figure 12, did you review any

 8   historical versions of that hyperlink?

 9   A   I reviewed the page as it was available to me

10   at the time of my analysis.   02:22:27

11   Q   I believe your review of this Figure 12 does

12   not touch on the first part of the first sentence

13   (as read):

14   "Now you can browse privately..."

15   Did you analyze that in your opening report?   02:22:50

16   MR. WATKINS: Objection; mischaracterizes the

17   report.

18   THE WITNESS: I'm not sure what you mean if I

19   analyzed those specific words.

20   BY MR. McGEE: 02:23:04

21   Q   Yeah. So you point out various words that

22   appear on this screen. Paragraph 50 (as read):

23   "For example, the Chrome Incognito

24   splash screen, as seen below in

25   Figure 12, states, among other   02:23:18

                                                    Page 147

1   things, that 'other people who use

2   this device won't see your activity.'"

3   Do you see that?

4   A   I do see that.

5   Q   But you don't do any analysis or include the   02:23:27

6   "now you can browse privately," correct?

7   MR. WATKINS: Objection; vague.

8   THE WITNESS: I disagree with that statement.

9   I mean, obviously, I provide a screenshot that

10   contains those words as part of my report. The fact   02:23:43

11   that certain words in -- in the screenshot and

12   others are in quotes seems like small distinctions.

13   Both set of words on are on the same page, so I do

14   not see the difference here.

15   BY MR. McGEE: 02:24:01

16   Q   Did you know that as a matter of law, the

17   Court found that there were two promises on this

18   screen, and the first is that "you can browse

19   privately," and that this second part that you

20   analyzed, the "other people who use this device   02:24:11

21   won't see your activity," that those were two

22   separate promises that Chrome made by Google?

23   MR. WATKINS: Objection; calls for a legal

24   conclusion and speculation.

25   THE WITNESS: I do not know the -- I'm   02:24:26

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1   guessing you're using the term "promise" in a -- in

2   a legal context. I do not know the exact meaning of

3   the word in that context, but, no, I was not aware

4   of this statement that you made.

5   BY MR. McGEE: 02:24:39

6   Q   Okay. Can you show me on this Incognito User

7   Notification Page, Figure 12, where it says that

8   Google will still collect the browsing activity that

9   I conduct while in incognito mode.

10   Do those words appear on this page in any   02:24:55

11   way?

12   A   Those exact words that you uttered do not

13   appear on this page as you uttered them.

14   Q   Do they appear in any other arrangement or

15   manner?   02:25:14

16   A   I don't think that --

17   MR. WATKINS: Objection; falls outside of the

18   scope of the expert report.

19   Go ahead.

20   THE WITNESS: Let me take a step back. My   02:25:26

21   assignment here was to read the splash screen and

22   what's behind the "Learn more" plus other

23   documentation that I cite in my report and to

24   determine after significant testing whether Chrome

25   incognito works according to my expectations as I   02:25:49

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```
 1     formed them when I look at the splash screen and

 2     associated documentation.

 3            And what I found is that my testing comports

 4     with my understanding of what I see on the screen.

 5     Now --                                              02:26:09

 6     BY MR. McGEE:

 7        Q   And that assignment --

 8        A   Now --

 9            (Simultaneous speaking - unreportable.)

10            THE WITNESS:  Please go ahead.              02:26:13

11     BY MR. McGEE:

12        Q   No, please.  I did not mean to speak over

13     you, Doctor.

14        A   I am done for this question.  Thank you.

15        Q   That assignment was given to you by Google,  02:26:19

16     correct?

17        A   That is -- my assignment was given to me by

18     counsel for Google.

19        Q   Okay.  And your assignment never changed,

20     correct?                                            02:26:26

21        A   Yes.  As we said in the beginning of the

22     deposition, my assignment never changed.

23        Q   If I could turn you to page -- it's going to

24     be paragraph 83.  I'm going to get you the page

25     number.                                             02:26:57
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 1   A   I think I have it. That's fine.

 2   Q   It's on page 56, Dr. Zervas, of your opening

 3   report.

 4   A   I am there. Thank you.

 5   Q   In that section, you describe orphaned   02:27:05

 6   islands of data. Do you remember that term of art

 7   that you used to describe the data that is related

 8   to private browsing activity?

 9   A   Well, I mean, I see the term right here in

10   front of me in quotes, yes, sure.   02:27:23

11   Q   So did you perform any investigation of how

12   Google stores that orphaned islands of data?

13   A   As in what --

14   MR. WATKINS: Objection --

15   Sorry.   02:27:36

16   Objection; vague.

17   THE WITNESS: I was going to ask for

18   clarification as in what databases it uses, what

19   technical systems or what -- what do you mean by

20   "stores the orphaned islands of data."   02:27:50

21   BY MR. McGEE:

22   Q   Well, let's start with databases.

23   A   No. I did -- databases are part of the back

24   end. And as we discussed before, that was outside

25   the scope of my assignment. My assignment was to --   02:28:07

                                                Page 151

1   part of my assignment, at least, was to understand

2   how data flows to Google change as users enter or

3   exit incognito and as they use various other

4   settings that I describe in my report.

5   Q   Okay. So safe to say you did not perform any   02:28:23

6   investigation of the orphaned islands of data on

7   Google's back end and how they might be stored,

8   used, collected or anything else, correct?

9   A   The orphaned islands of data I referred to

10   are the datasets I collected by performing   02:28:45

11   communications with Google and non-Google websites,

12   assembling a dataset via Fiddler and then analyzing

13   that. This is what I'm referring to in this

14   paragraph.

15   Q   Okay. And if you'll turn to page 58 of your   02:29:04

16   opening report, paragraph 87.

17   A   Thank you. I am there.

18   Q   These are some of the other free services and

19   analytic services that you identified that are on

20   the market for providing web traffic analysis   02:29:27

21   services for paragraph 87 of your opening report.

22   Do you see that?

23   A   I see that. My only slight objection is that

24   some of them I think are paid services. You said

25   free services, but I don't think it's a major, you   02:29:43

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1   know, point.

2   Q   Understood. Have you ever analyzed how

3   Hotjar works?

4   A   Ever? I certainly have not analyzed how

5   Hotjar works as part of this assignment, and I do   02:30:00

6   not recall coming across it in any depth.

7   Q   Okay. Did you direct anyone to investigate

8   how Hotjar works?

9   A   No. Certainly I did not direct anyone to

10 investigate how Hotjar works in the context of this   02:30:22

11 case.

12   Q   And what about Mixpanel?

13   A   Is the question whether I directed someone to

14 investigate how Mixpanel works in the context of

15 this case?   02:30:34

16   Q   Yes, sir.

17   A   The answer is no.

18   Q   Okay. Did you investigate how Mixpanel works

19 in the context of this case?

20   A   Let me be slightly more specific and not   02:30:51

21 speak in absolutes. I provide the citation to the

22 Mixpanel website. I went to the Mixpanel website.

23 But if you ask me -- the way I understood your

24 question is if you're asking me if I investigated in

25 the same depth with Fiddler and collecting datasets,   02:31:09

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1   that latter part I did not do.

2   Q   Thank you for the clarification, Dr. Zervas.

3   And I did mean the latter and not the former.

4   Same question with Piwik PRO, P-i-w-i-k, PRO,

5   all caps. Did you perform any in-depth   02:31:27

6   investigation of how that functions?

7   A   Beyond gaining some understanding for the

8   purposes of writing, you know, this paragraph and

9   the surrounding paragraphs, no, I did not perform

10   any specific testing that involves collection of   02:31:44

11   Piwik PRO URLs. Though, again, to the extent that

12   some of the websites that I analyzed may use any of

13   these services, these URLs may exist in my backup.

14   Q   Then I think the last question is Adobe

15   Analytics.   02:32:07

16   Did you perform any in-depth analysis of how

17   Adobe Analytics functions?

18   A   Using the same definition of in-depth as we

19   used before, no.

20   And if you don't mind, I would like to add   02:32:18

21   something that covers all of these five services

22   that you asked me about. I think had I investigated

23   other cookies from these services and cookie values

24   from these services, my results with respect to a

25   regular mode and incognito mode and my conclusions   02:32:38

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1   would have been the same.

2   So if -- I'll give you an example. I was

3   investigating a scenario where I block third-party

4   cookies because I'm in incognito mode and

5   Mixpanel -- and, again, I'm hypothesizing here --   02:33:02

6   use third-party cookies.

7   I think I'm certain, but I would find that

8   these are appropriately blocked. I don't think

9   there's anything specific about third-party cookies

10   from Mixpanel versus Hotjar versus Google Analytics   02:33:09

11   in that regard.

12   Q   And if I can take you to paragraph 93 of your

13   report, which is on page 62.

14   A   I am there.

15   Q   Dr. Zervas, if I don't want Google to track   02:33:30

16   me while I'm in incognito mode, is it your testimony

17   that all I have to do is install that opt-out add-on

18   that you describe in paragraph 93?

19   MR. WATKINS: Objection; vague.

20   THE WITNESS: Yes, Mr. McGee. I -- your   02:33:51

21   definition of track me, I believe -- when -- when

22   you say that and thinking about the discussion we

23   have been having today, I think your definition is

24   like no communication whatsoever with any Google or

25   any Google-associated domain. And I don't think   02:34:09

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1   that simply -- let's see. What is paragraph 93

2   about?

3   Which part of paragraph 93, again, were you

4   looking at, Mr. McGee?

5   BY MR. McGEE: 02:34:50

6   Q   It's at the very end. There's the (as read):

7   "...and encourages customers to

8   point users to the Google Analytics

9   opt-out add-on, which is available

10   on Chrome, Firefox, Edge, and Safari,   02:34:59

11   footnote 99."

12   And that's on page 63.

13   A   Thank you. I understand. I see it now.

14   So, yes, I think that is a very specific

15   purpose that opts you out from Google Analytics.   02:35:11

16   But my broad understanding of your personal desire

17   to not be tracked, that involves zero communication

18   absolutely ever with Google.

19   And I don't think Google Analytics opt-out,

20   as I understand it, does that. It's there in the   02:35:28

21   name. It opts you out from Google Analytics.

22   Q   And then if I can take you to paragraph 102

23   of your report, which is on page 68, and it spans

24   over to page 69.

25   A   Yes. It's about the Google Analytics of the   02:35:51

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1   opt-out browser add-on again. I can see.

2   Q   So at the bottom of the page, of 69, can you

3   please read the last section that starts with "Allow

4   in Incognito."

5   A   You said 69?   02:36:12

6   Q   Page 69, Figure 37.

7   A   Oh, you're referring to the screenshot.

8   Thank you. Yes. Okay.

9   Q   Yes, sir. Thank you.

10   A   So it says (as read):   02:36:24

11   "Allow in Incognito."

12   That's the title of the section. And then it

13   says (as read):

14   "Warning: Google Chrome cannot

15   prevent extensions from recording   02:36:32

16   your browsing history. To disable

17   this extension in Incognito mode,

18   unselect this option."

19   Q   Dr. Zervas, did you perform any testing of

20   the traffic -- let me back that up.   02:36:46

21   Did you perform any testing of how this

22   Google Analytics opt-out add-on works between

23   regular mode and incognito mode?

24   A   I tested this extension. Let me go back to

25   my exhibits to tell you my exact tests.   02:37:13

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1   Okay. So I see here Exhibit 2.11, Mr. McGee.

2   Q   Okay.

3   A   It says (as read):

4   "Chrome Browser Tested on

5   Windows 10 in Regular Browsing   02:37:57

6   Mode."

7   And it's with Google Analytics opt-out

8   disabled, column 1, and then enabled, column 2.

9   So I think this is the sort of testing you

10   were asking me about.   02:38:07

11   Q   So it looks like, Dr. Zervas, between -- did

12   you test it in incognito mode?

13   A   Let me point you now to Exhibit 2.31 (as

14   read):

15   "Comparison of Cookie Values   02:38:56

16   Transmitted to Google Domains,

17   Google Analytics Opt-Out Extension

18   Test, Chrome Browser Tested on

19   Windows 10 in Default Private

20   Browsing Mode with Third-Party   02:39:08

21   Cookies Blocked."

22   And that specific test is from The New York

23   Times, one of the websites that I analyzed. I think

24   this is -- this answers your question.

25   Q   Okay. So even with the Google Analytics   02:39:19

                                                    Page 158

1   opt-out enabled, the ga -- or excuse me, the gads

2   cookie was still transmitted, correct?

3   A   Let's be a bit more clear here. It's a

4   cookie value. Looking at the table alone, you

5   cannot tell if that cookie value was transmitted as   02:39:42

6   a cookie or as a URL parameter in all of the limited

7   strings that we were discussing before.

8   Q   Okay. But something is still transmitted to

9   Google, correct?

10   A   If you're asking me is the__gads cookie   02:39:56

11   values transmitted, yes. According to my testing,

12   it's transmitted when Google Analytics opt-out is

13   enabled, visiting New York Times under the

14   configuration what I described in the title of that

15   exhibit.   02:40:13

16   Q   And what is the purpose of the gads cookie?

17   A   I do not recall right now.

18   Q   Do you know what the purpose of the gcl_au

19   cookie is?

20   A   Again, beyond noting that the cookie values   02:40:34

21   are different when opt-out is disabled versus

22   enabled, I do not recall what the g- -- I'm sorry,

23   the _gcl_au cookie is.

24   MR. McGEE: Okay, Dr. Zervas. I think this

25   is probably a good -- it's about an hour, and I am   02:41:05

                                                Page 159

1   going to move on to your rebuttal report. But it

2   might be a good time to take a break. I think it's

3   a logical break.

4   THE WITNESS: I would appreciate that. Thank

5   you for keeping it to one-hour-long segments. It   02:41:18

6   works very well for me. I appreciate it.

7   MR. McGEE: Thanks. We can go off the

8   record.

9   THE VIDEOGRAPHER: We're going off the

10   record. This is the end of media unit 4. The time   02:41:27

11   is 2:41 p.m.

12   (Recess.)

13   THE VIDEOGRAPHER: We are going back on the

14   record. This is the beginning of media unit 5. The

15   time is 2:49 p.m.   02:49:57

16   BY MR. McGEE:

17   Q   Dr. Zervas, with respect to your opening

18   report, you reserved the right should any further

19   information come to light, that you would change

20   your opinions or update them or modify them.   02:50:09

21   My question is, is there anything in your

22   opening report that you want to update or change

23   separate and apart from what you discuss in your

24   rebuttal report?

25   A   No. Thank you.   02:50:27

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1   Q   Okay. So now, if we turn to your rebuttal

2   report, if I can take you to paragraph 82, which

3   appears on page 42 of Exhibit 2. And Exhibit 2 is,

4   again, the reference to the exhibit in the depo, not

5   the report.   02:50:50

6   A   I am on paragraph 82 within my hard copy of

7   the report.

8   Q   Okay. What websites inform users that

9   their -- that when the user visits the website in a

10   private browsing mode, Google is still collecting   02:51:08

11   their information?

12   MR. WATKINS: Objection; vague.

13   THE WITNESS: I think I discuss the answer to

14   your question in paragraph 85 and below. What I

15   provide -- I also visited the top 25 websites for   02:51:29

16   Google Analytics and the top 25 websites for Google

17   Ad Manager, and then I provide excerpts of the

18   disclosures made by these websites.

19   BY MR. McGEE:

20   Q   Right. And where in those disclosures does   02:51:43

21   it say that Google will still collect your

22   information when you are in a private browsing mode?

23   A   Right. So what I see here is that a number

24   of these disclosures, they actually name Google as a

25   party that might receive data. So, for instance,   02:52:29

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1   change.org (as read):

2   "We use third-party analytics like

3   Google Analytics," et cetera, "the

4   Amplitude service..."

5   Okay. And then it says (as read):   02:52:41

6   "These analytics services may use

7   cookies and similar technologies to

8   analyze how people use our services

9   and provide statistical reports

10   about aggregated user behavior."   02:52:49

11   So this, to me, is a clear statement that the

12   services that are listed here will receive data, and

13   if there were certain circumstances where users

14   should expect that data not to be received, maybe it

15   could be mentioned here.   02:53:08

16   But I don't see anything that says that, you

17   know, if you use private mode, your data will not be

18   received by Amplitude or Optimizely or Chartio.

19   Q   Okay. So, again, you found no disclosure

20   that explicitly said Google would collect   02:53:26

21   information when you are in private browsing mode on

22   these third-party disclosures, right?

23   A   I think if such a disclosure existed, then it

24   would have to exist for every single third-party

25   service that this website used. And this change.org 02:53:47

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1   disclosure is a good example. They name one, two,

2   three -- four different services. I don't think any

3   of the other services are Google associated, just

4   looking at them.

5   So I'm not sure what they meant to do. To   02:54:06

6   say that when during incognito none of the services

7   will receive data, I -- it wouldn't be consistent

8   with my expectations.

9   Q   Okay. But, again, Dr. Zervas, none of these

10   disclosures say Google will collect your information   02:54:26

11   when you are in private browsing mode, correct?

12   MR. WATKINS: Objection; asked and answered.

13   THE WITNESS: I -- I do think I have answered

14   that. But when you also say "your information,"

15   let's -- let's be clear that this is a broad term.   02:54:45

16   And here we're talking about specific requests that

17   are made by each third-party service, not just by

18   Google services to provide, you know, the specific

19   functionality that webmasters have installed on

20   their websites -- web developers, excuse me, have   02:55:02

21   installed on their websites.

22   BY MR. McGEE:

23   Q   Okay. So paragraph 86, you provided the

24   change.org answer -- or the change.org example.

25   Where does private browsing mode appear in   02:55:13

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1   that disclosure?

2   A   It does not appear in the quoted statement.

3   I would have to look at the entire privacy policy to

4   see if it appears anywhere else.

5   Q   Okay. Same with grammarly.com. Where does   02:55:31

6   private browsing mode appear in that disclosure?

7   MR. WATKINS: Objection; vague.

8   THE WITNESS: As you say that, Mr. McGee, I

9   think the other thing to remember and to provide

10   some context around is that Chrome is not the only   02:55:47

11   browser. There are other browsers with significant

12   market share like Firefox, like Edge, like Safari,

13   especially on mobile devices, right?

14   So, again, I think to precisely answer your

15   question, private browsing mode is not in this   02:56:05

16   quoted statement, but disclosing every single

17   combination of third-party service and browser,

18   that's not what I would have expected to see in

19   those disclosures.

20   BY MR. McGEE: 02:56:25

21   Q   If I can take you to paragraph 98 of your

22   rebuttal report, which is going to be on page 51.

23   A   Thank you. I'm on paragraph 98.

24   Q   This is where you opine in rebuttal about the

25   detailed profiles and how that doesn't occur because   02:56:55

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1   of the orphaned islands of data. Is that a fair,

2   very high, very broad summary of that paragraph,

3   Dr. Zervas?

4   A   Frankly, it's not a very long paragraph, so I

5   don't feel the urge to provide the summary, no   02:57:15

6   matter how high level. We can read the paragraph if

7   you want.

8   Q   If you want to read it, sure.

9   A   So paragraph 98?

10   Q   Yes, sir.   02:57:24

11   A   Sure. So it says (as read):

12   "The 'detailed profiles'

13   Mr. Hochman describes are in

14   fact" -- in quotes again --

15   "'orphaned' islands of data   02:57:36

16   reflecting browsing activity from

17   just one Private Browsing Session.

18   The data are associated only with a

19   cookie value that is deleted from

20   the user's browser when she closes   02:57:45

21   the Private Browsing Session. For

22   users who do not sign into their

23   Google Accounts (as the class

24   members here), the cookie values set

25   in Private Browsing Mode cannot be   02:57:59

                                                        Page 165

1   used to link the user's activities

2   in a given Private Browsing Session

3   to the user's activities in other

4   Regular or Private Browsing Mode

5   Sessions. This prevents Google from   02:58:12

6   using these cookie values to create

7   'cradle-to-grave profiles of users,'

8   as Plaintiffs allege. Rather, the

9   purported 'profiles' based on cookie

10   values, to which Mr. Hochman refers,   02:58:31

11   reflect at most certain browsing

12   activity (visits to websites that

13   use Google services) by an

14   unidentified user during a single

15   Private Browsing Session."   02:58:43

16   Q   Dr. Zervas, I understand in your opening

17   report, as you cite here, you did experiments with

18   the cookie values to come to this conclusion.

19   My question is, after reading Mr. Hochman's

20   report, did you ask Google -- or excuse me, did you   02:58:56

21   investigate further how Google uses the orphaned

22   islands of data that you reference in this

23   paragraph 98?

24   A   I think this goes back to our prior

25   discussion that it was not necessary for me to   02:59:15

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1   investigate what Google does on its back end with

2   this, in quotes, orphaned islands of data to form

3   the bases for the opinions that I offer in my

4   opening report or to provide very specific critiques

5   that I provide here on certain opinions that   02:59:39

6   Mr. Hochman offers.

7   Q   Did you read Mr. Hochman's report in its

8   entirety?

9   A   I did.

10   Q   Okay. Did you see all of the testing that   02:59:46

11 Mr. Hochman performed both -- or excuse me, that

12 involved the special master process?

13   A   You will have to remind me what specifically

14 you have in mind, if there's something you want to

15 show me to refresh my memory.   03:00:08

16   Q   No. I'm asking you, based on your review,

17 did you take note of the extensive testing that

18 Mr. Hochman did with the plaintiffs' data that was

19 produced from the special master process in this

20 case?   03:00:25

21   MR. WATKINS: Objection; vague and

22 mischaracterizes -- I'm sorry. Just vague.

23   THE WITNESS: If I took note -- if you're

24 asking me whether that was necessary for me to form

25 the bases of any opinions, the answer is no. This   03:00:42

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1   is -- this was not necessary for me to form the

2   opinions that I formed in my opening report or to

3   rebut specific assertions that Mr. Hochman makes.

4   BY MR. McGEE:

5   Q   Dr. Zervas, you understand that Mr. Hochman   03:00:59

6   relied on more than just cookie testing to form his

7   opinions on the cradle-to-grave profile users and

8   how Google uses the information that it receives on

9   the back end.

10   So it's your testimony here today that you   03:01:22

11   did not need to further inquire or review any of

12   that information to rebut the conclusions of

13   Mr. Hochman?

14   MR. WATKINS: Objection; assumes facts not in

15   evidence.   03:01:32

16   MR. McGEE: I think you're right there, yeah.

17   Q   Go ahead, Dr. Zervas, please.

18   A   Sorry. Okay. Sorry. I -- I got slightly

19   delayed here.

20   My testimony here today is that the bases for   03:01:48

21   my opinions lies in my reports. I think I provide

22   adequate citations to rebut specific opinions of

23   Mr. Hochman and perform sufficient bases for these

24   rebuttals.

25   I also understand that Mr. Hochman might have   03:02:10

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```
 1      had a different assignment that also included him

 2      looking at specific back-end processes or datasets

 3      or whatever it might be.

 4            I further understand that there is an expert

 5      employed by Google, not me, who was looking on          03:02:26

 6      back-end processes that you're asking me about.  So

 7      this is what I understand.

 8         Q   Okay.  But when you read Dr. -- or excuse me.

 9      When you read Mr. Hochman's report and you very

10      specifically sought to rebut Hochman opinion 10, did    03:02:46

11      you review all of the information that was cited in

12      Hochman opinion 10 before forming your rebuttal

13      response reflected here on -- starting on page 51 of

14      Exhibit 2?

15            MR. WATKINS:  Objection; mischaracterizes the     03:03:11

16      expert report.

17            THE WITNESS:  The rebuttal here is based on

18      my own analysis that establishes that cookie values

19      are different.  And I very specifically,

20      essentially, repeat the same conclusion, maybe in       03:03:26

21      slightly different words than I have in my opening

22      report, which is that the cookie values between

23      regular mode and private browsing mode cannot be

24      used as a link for these two browsing sessions.

25      BY MR. McGEE:                                            03:03:49
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1   Q   Did you ask Google for all of the information

2   and all of the data that was reflected in

3   Mr. Hochman's report, opinion 10?

4   MR. WATKINS: Objection; vague.

5   THE WITNESS: It was not -- again, you will   03:04:06

6   have to tell me more specifically what piece of data

7   you have in mind, but it was not necessary for me to

8   do that.

9   And all the information I needed and all the

10 citations that I needed to rebut Mr. Hochman   03:04:21

11 opinion 10 are contained within my rebuttal report,

12 which also should be understood in the context, of

13 course, of my opening report.

14 BY MR. McGEE:

15   Q   Dr. Zervas, if we go back -- no, I'm -- yeah,   03:04:49

16 if we go back to -- sorry. One moment. No, sorry.

17 We're -- we're on the right...

18   Dr. Zervas, if you go to your rebuttal 9,

19 which is in relation to Hochman opinion 15, and

20 that's on page 52 of your rebuttal report.   03:05:44

21   A   I am there. Paragraph 99.

22   Q   Dr. Zervas, did you ask for all of the

23 material that Mr. Hochman relied on to provide his

24 opinion number 15 that you reference here on page 52

25 of your rebuttal report?   03:06:11

```
 1        A    I had enough material to, in my opinion,

 2    adequately support my rebuttal in this section.

 3        Q    Is that a no, that you did not ask for all of

 4    the material that Mr. Hochman cited and relied upon

 5    to form his opinion number 15?                    03:06:33

 6            MR. WATKINS:  Objection; vague,

 7    mischaracterizes testimony.

 8            THE WITNESS:  Anything that was needed for me

 9    to rebut opinion 15, to provide sufficient basis for

10    that, either was available for me or I asked and I    03:06:54

11    received.  There is not much more I can add to that,

12    because I don't know what "all" means in this

13    context.

14    BY MR. McGEE:

15        Q    When you read Mr. Hochman's report and he    03:07:08

16    provided Hochman opinion 15, there were numerous

17    citations that included internal Google documents.

18            Did you review any of those internal doc- --

19    Google documents?

20        A    I reviewed a number of documents for this    03:07:25

21    case.  If there is something you want to show me, I

22    might remember if I reviewed it or not.

23        Q    Well --

24        A    I -- go ahead.

25        Q    So your rebuttal report actually only cites    03:07:40
```

1   one Google Bates label.

2   A   Sure.

3   MR. WATKINS: Objection; mischaracterizes the

4   expert report.

5   MR. McGEE: Okay. Mr. Watkins, I've given   03:07:52

6   you a lot of leeway. What other Bates labels are

7   reflected in Dr. Zervas' rebuttal report? I'm

8   looking at C-1. I see one Bates-stamped document,

9   GOOG-BRWN-00699213. If you can point me to anywhere

10   else in this report that has a Bates label that   03:08:13

11   would mischaracterize that, please do.

12   MR. WATKINS: Sorry. I'm just locating

13   Exhibit -- Appendix C.

14   So it -- was the question what the basis of

15   my objection is?   03:09:02

16   MR. McGEE: Yeah. You said that I

17   mischaracterized his report, that he only cited one

18   document that has been produced in this litigation

19   that had a Bates label on it. So how is that

20   mischaracterizing this report?   03:09:16

21   MR. WATKINS: Okay. I misunderstood your

22   question, and I'll withdraw that objection. But I

23   still will object to your question on the basis of

24   vagueness.

25   BY MR. McGEE: 03:09:34

                                                   Page 172

1   Q   Dr. Zervas, did you rely on any other

2   Bates-stamped documents other than GOOG-BRWN-

3   00699213 for your rebuttal report in this case?

4   A   Of all the Bates-stamped document, you will

5   see various legal documents that I cite, and many of   03:09:56

6   these came with exhibits. I -- again, not me being

7   an attorney, I don't remember if they were

8   Bates-stamped or not, but they were not, for

9   instance, public documents, as we discussed before.

10   Q   Okay. When you reviewed the depositions of   03:10:18

11   Justin Schuh, S-c-h-u-h, Michael Kleber, Ramin

12   Halavati, Rory McClelland, did you take note of all

13   of the Bates numbers that were included in those

14   depositions and compare them against the Bates

15   numbers that were reflected in Mr. Hochman's report?   03:10:39

16   A   No. I did not cross-check Bates number

17   between these documents --

18   Q   Did you direct -- did you direct anyone to do

19   that with the Analysis Group or otherwise?

20   A   No, I did not direct the Analysis Group or   03:10:56

21   otherwise to compare these long numbers.

22   Q   So when you were reviewing Mr. Hochman's

23   opinion number 15, were you provided all of the

24   documents that supported opinion 15?

25   A   I was provided with all the documents that I   03:11:18

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1   needed in order to specifically rebut opinion 15.

2   The purpose here of my report is not to state

3   Mr. Hochman's opinion. I understand that he cites a

4   broader universe of documents. I, as the rebuttal

5   expert, have a specific critique, which I think is   03:11:41

6   adequately substantiated and supported in my own

7   report.

8   Q   Dr. Zervas, how could you evaluate

9   Mr. Hochman's opinion number 15 if you did not

10   review all of the supporting information that   03:11:56

11   Mr. Hochman relied on in forming his opinion

12   number 15?

13   MR. WATKINS: Objection; argumentative and

14   mischaracterizes the report.

15   THE WITNESS: I'll give you an example,   03:12:09

16   Mr. McGee, from my day-to-day work. One significant

17   component of my work is to act as a reviewer for

18   academic papers. Similar to these documents that we

19   are discussing today, academic papers are full of

20   citations.   03:12:27

21   When I review an academic paper -- and I

22   think I'm a decent reviewer -- and I provide

23   technical feedback, I do not go and read in detail

24   every citation that is provided by the authors. So,

25   for instance, there might be a related works   03:12:44

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1   section. It would be, you know, not an important

2   part of my work to go and read every other paper and

3   evaluate it.

4   So, certainly, one can provide technical

5   feedback, and there is also original contributions   03:12:56

6   in the report, right? So the entirety of our work,

7   either as experts in cases or academics publishing

8   work, part of it is citations, part of it is

9   original work that we do, just like my testing in

10 this particular instance.   03:13:11

11   So if Mr. Hochman wanted to critique my

12 testing, I wouldn't have anticipated him to go look

13 at Bates-stamped documents. I would anticipate that

14 he can provide a critique simply based on my words

15 and the data I provide. So I don't think this would 03:13:26

16 be something unusual here.

17 BY MR. McGEE:

18   Q   Okay. But, Dr. Zervas, you've admitted you

19 have not examined Google's back-end processes,

20 correct?   03:13:38

21   A   Examining Google's back end was outside the

22 scope of my assignment, and it was unnecessary for

23 me to form the opinions in my opening report or to

24 rebut specific points that I quote in Mr. Hochman's

25 report.   03:13:56

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1   Q   But you understand that Mr. Hochman performed

2   an analysis of how those systems work with the

3   assistance of the special master, correct?

4   A   I understand that Mr. Hochman had a different

5   assignment that also involved what you stated.   03:14:10

6   Q   Okay. Without knowing how that works, how

7   can you critique his opinion?

8   MR. WATKINS: Objection; vague.

9   THE WITNESS: I think we can look at any

10   specific opinion that I critique, and I believe that   03:14:27

11   I provide adequate support for my opinions. Again,

12   I gave you a very specific example. Should

13   Mr. Hochman want to criticize my opening report, a

14   lot of the work that is within there is original.

15   It's my words, not from documents that pertain to my   03:14:46

16   analysis, description of my analysis, my testing

17   protocol.

18   So if Mr. Hochman, for instance, wanted to

19   criticize my testing protocol, I wouldn't expect him

20   to go look at the Google back end.   03:15:01

21   BY MR. McGEE:

22   Q   Okay. So the same question I would have for

23   opinion 26, and I think that starts on page 57,

24   paragraph 109.

25   Again, with --   03:15:30

                                                    Page 176

1   A   Yes.

2   Q   -- Hochman opinion 26, did you review all of

3   the information that was cited in his report before

4   you offered a critique of that opinion?

5   A   The basis of my rebuttal here lies within my   03:16:07

6   own testing and the findings of my own report. And

7   I think this is an adequate rebuttal to Mr. Hochman.

8   Q   Okay, Dr. Zervas. But did you review all of

9   the information that Mr. Hochman relied on in

10   forming opinion 26 before offering your rebuttal to   03:16:29

11   that opinion?

12   A   At different times, I reviewed different

13   pieces of information. The pieces of information

14   that I needed in order to rebut Mr. Hochman's

15   opinion 26 is in -- sorry, I lost the paragraph --   03:16:47

16   in paragraphs 109, 1010 [sic], 111 and so on.

17   Q   Okay. And the entirety of what you would

18   have relied on to rebut any of Dr. -- or excuse me,

19   any of Mr. Hochman's opinions would be cited or

20   otherwise referenced in schedule -- or Appendix C-1   03:17:08

21   of your rebuttal report, correct?

22   A   Again, with the disclaimer that when one

23   reads a deposition, one might also read some

24   citations. When one reads an expert report like

25   Mr. Hochman's, one might also go read some   03:17:26

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1   citations. But the important point is that the

2   materials considered for my report are stated in

3   Appendix C.

4   And I think that my opinions -- my rebuttals,

5   excuse me, are well supported by the citations I've   03:17:42

6   relied within, including my original analysis in my

7   opening report.

8   Q   Okay. And the tags that you describe in

9   section 7 of your rebuttal report -- and that's --

10 again, it starts on page 57 -- did you perform any   03:17:59

11 investigation as to how those -- the information

12 that is related to those tags is received and

13 processed by Google on its back end?

14   MR. WATKINS: Objection; vague.

15   THE WITNESS: What -- can you explain,   03:18:17

16 Mr. McGee, what you mean -- information related to

17 those tags means?

18 BY MR. McGEE:

19   Q   Yeah. Any -- so there's a tag and any

20 information that might come with that tag through   03:18:28

21 the transmission of the data. So the tag might also

22 include a user's IP address. It might include any

23 other information. Did you do any investigation as

24 to how Google receives that data and how it

25 processes it?   03:18:46

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1   MR. WATKINS: Same objection and object to

2   the form.

3   THE WITNESS: Let's take a small step back.

4   I -- I would not describe the tag the way you

5   describe it, as something that comes with an IP   03:18:59

6   address or something like that.

7   The way I describe a tag is if I want to

8   install Google Analytics on my website, then Google

9   gives me a piece of code that is -- you know, the

10   term of art, as we said, is the word "tag."   03:19:18

11   Why tag? Because it's really a collection of

12   tags, but, you know, there's a script tag and then

13   there's some other stuff. But there's no IP address

14   that comes with that or user agent or something like

15   that. It's a piece of code, the tag.   03:19:33

16   BY MR. McGEE:

17   Q   Okay. Well, did you investigate how Google

18   receives those tags?

19   MR. WATKINS: Objection; vague.

20   THE WITNESS: Maybe I wasn't clear. I don't   03:19:44

21   think Google receives those tags. The tag is a

22   piece of code that Google provides to web

23   developers, who then install it on their website so

24   that they can receive the service that they intend

25   to receive like analytics, for instance. That's how   03:20:01

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1   I use the word "tag" myself.

2   MR. McGEE: Okay. I think if we take a break

3   now, I'll be able to regroup here and I think I can

4   come back and finish my questions. So maybe a

5   15-minute break.   03:20:38

6   Does that work, Mr. Watkins?

7   MR. WATKINS: Yeah, that would be fine.

8   MR. McGEE: Great. Go off the record.

9   THE VIDEOGRAPHER: We're going off the

10   record. This is the end of media unit 5. The time 03:20:45

11   is 3:20 p.m.

12   (Recess.)

13   THE VIDEOGRAPHER: We are going back on the

14   record. This is the beginning of media unit 6. The

15   time is 3:33 p.m.   03:33:47

16   BY MR. McGEE:

17   Q   Dr. Zervas, do you know what a browser

18   identifier for advertising is?

19   A   Is that a general term or something specific

20   that you have in mind?   03:34:02

21   Q   Have you ever heard of it? Have you ever

22   heard of a ▇▇▇?

23   A   A ▇▇▇? Right now, that acronym doesn't ring

24   a bell.

25   Q   Okay. What about a ▇▇▇▇▇▇▇▇▇▇▇▇   03:34:24

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1   ██? Ever heard of that?

2   A   Again, it doesn't ring a bell right now.

3   Q   You ever heard of a █████ token, ███████?

4   A   Same answer. It does not right now. I maybe

5   have come across something like that, but I don't   03:34:44

6   particularly recall it.

7   Q   Do you know anything about Google's ██████

8   operation?

9   MR. WATKINS: Objection; vague.

10   THE WITNESS: Can you specify what you mean   03:34:56

11 by operation?

12 BY MR. McGEE:

13   Q   Just what ██████ means within Google.

14   A   This term, I believe, has come up in another

15 case I'm working on. I'm not sure what I'm allowed   03:35:09

16 to disclose and what not. But at a high level, I

17 recall it being a database.

18   Q   Okay. Have you done any work on the ██████

19 database in this case?

20   A   No, I have not.   03:35:23

21   Q   Have you been permitted to look at anything

22 about the ██████ database in this case?

23   A   I have not asked, so permission was never an

24 issue.

25   Q   Okay. And if you'd go to paragraph 126 of   03:35:35

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1   your rebuttal report, and that's on page 68 of

2   Exhibit Number 2.

3   A   68.   I am on page 68, Mr. McGee.

4   Q   Earlier, we talked about these other analytic

5   services, and you corrected me, the free and paid.   03:36:02

6   I understand that you haven't done any detailed or

7   in-depth analysis, but I have to ask this question.

8   Did you perform any analysis to determine

9   what the energy consumption would be for Hotjar?

10   A   No, I have not.   03:36:21

11   Q   Any analysis to determine what the energy

12   consumption for Mixpanel is?

13   A   By energy consumption, I presume you mean

14   what -- how much energy my computer consumes or the

15   servers to render those services. It's a -- this is   03:36:41

16   a very complex question, but I have not done that.

17   Q   Okay. Well, really, in the context of your

18   opinion that you're -- or your rebuttal opinion that

19   you're expressing here about energy savings, so what

20   I'm asking is, is whether you've done any   03:36:54

21   comparison, really, between how much energy Google

22   Analytics consumes within the scope of this opinion

23   and what these other analytics companies would

24   consume.

25   A   I see what you're saying. You're asking more 03:37:07

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1   specifically in the context of my opinion on -- like

2   starting paragraph 125?

3   Q   Yes, sir.

4   A   Give me one second, please, to refresh my

5   memory about what I did here.   03:37:24

6   Q   Sure.

7   A   My point here is that in Mr. Hochman's

8   opinion, there is an assumption that if Google

9   Analytics somehow disappeared, we would gain back

10   all that energy, whatever that might be. The point   03:37:53

11   that I'm trying to make here is that clearly, web

12   developers have a need for these services.

13   So when we are evaluating those

14   counterfactuals, e.g., not using Google Analytics,

15   we have to think, well, someone else might enter the   03:38:15

16   market. And it doesn't have to be one of these

17   services that I outline here. It could be a

18   brand-new service that we know nothing about and how

19   much energy it might consume.

20   So this is a very difficult counterfactual to   03:38:27

21   evaluate. And statements like what I quote here

22   from Mr. Hochman, you know, "increasing user's

23   energy and device costs," they have to be evaluated

24   against a hypothetical world that we don't know what

25   looks like.   03:38:48

1   Q Okay. And, Dr. Zervas --

2   A May I add something? Because I think this is

3   a very interesting discussion, do you mind if I add

4   something regarding energy costs?

5   Q I don't mind at all.   03:39:03

6   A Part -- part of the reason -- you know, as a

7   marketing professor, I understand that fairly well.

8   We talk about the marketing funnel all the time.

9   And part of what all these analytic services do is

10   they try to tell you, where do your users go? Do   03:39:17

11   they get lost? Do they get stuck? Do they spend

12   way too much time finding something on your site?

13   So to some extent, we would also have to

14   account not only for the energy costs to provide

15   those services, but when websites use them, how much   03:39:33

16   do they improve? How much faster can users navigate

17   those websites?

18   So that statement that Mr. Hochman makes

19   ignores all these things, hence my -- hence my

20   rebuttal.   03:39:47

21   Q Okay. And, Dr. Zervas, I asked the same

22   question of your opening report, because I think you

23   had kind of a reservation of, if anything new comes

24   to light or any other documents are provided, you

25   may revise or -- or otherwise revisit your opinions. 03:40:03

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1	Anything that you would change about your rebuttal
2	report similarly?
3	(Technical difficulty.)
4	BY MR. McGEE:
5	Q Sorry. You may be on mute or I may be. 03:40:19
6	A I put my report on the -- sorry. I will
7	start from the beginning.
8	Sitting here at this moment, I would not -- I
9	have not seen something that changed my opinions
10	contained in my rebuttal report. 03:40:36
11	Q And that's even with reviewing the sanctions
12	order from the Court about Google's collection
13	practices?
14	A I -- I reviewed it briefly enough to answer
15	your specific questions. In that review, I did not 03:40:49
16	see anything that changes the opinions that I offer
17	in this report.
18	MR. McGEE: Okay. I don't have any other
19	questions. Your counsel may have questions, but
20	thank you for your time, Dr. Zervas. 03:41:01
21	THE WITNESS: I appreciate it, and I
22	appreciate your flexibility with breaks and
23	finishing earlier than expected. Thank you.
24	MR. McGEE: Well, your counsel may have
25	questions, though. So -- 03:41:15

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1   THE WITNESS: I'm sorry. Yes.

2   MR. WATKINS: We actually don't have any

3   questions, so I think we can conclude.

4   MR. McGEE: Okay. I think before we go off

5   the record, Mr. Watkins, do you want to have him   03:41:25

6   read and sign? Are you going to reserve on that?

7   MR. WATKINS: Yeah, he's going to read and

8   sign.

9   MR. McGEE: Okay.

10   THE VIDEOGRAPHER: May I go off?   03:41:37

11   MR. McGEE: We can go --

12   THE VIDEOGRAPHER: Thank you, Counsel.

13   We are off the record at 3:41 p.m., and this

14   concludes today's testimony given by Dr. Georgios

15   Zervas, Ph.D. The total number of media used was   03:41:48

16   six and will be retained by Veritext Legal

17   Solutions.

18   (TIME NOTED: 3:41 p.m.)

19

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1   I, the undersigned, a Certified Shorthand

2   Reporter of the State of California, do hereby

3   certify:

4   That the foregoing proceedings were taken

5   before me at the time and place herein set forth;

6   that any witnesses in the foregoing proceedings,

7   prior to testifying, were placed under oath; that a

8   record of the proceedings was made by me using

9   machine shorthand which was thereafter transcribed

10   under my direction; further, that the foregoing is

11   an accurate transcription thereof.

12   I further certify that I am neither

13   financially interested in the action nor a relative

14   or employee of any attorney of any of the parties.

15   IN WITNESS WHEREOF, I have this date

16   subscribed my name.

17

18   Dated: August 24, 2022

19

20

21

22   *Nadia Newhart*

23   NADIA NEWHART

24   CSR No. 8714

25

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1    BRETT N. WATKINS, ESQ.

2    brettwatkins@quinnemanuel.com

3                                          August 24, 2022

4    RE: BROWN vs. GOOGLE LLC

5    AUGUST 22, 2022, GEORGIOS ZERVAS, Ph.D., JOB NO. 5344594

6    The above-referenced transcript has been

7    completed by Veritext Legal Solutions and

8    review of the transcript is being handled as follows:

9    __ Per CA State Code (CCP 2025.520 (a)-(e)) - Contact Veritext

10       to schedule a time to review the original transcript at

11        a Veritext office.

12   __ Per CA State Code (CCP 2025.520 (a)-(e)) - Locked .PDF

13       Transcript - The witness should review the transcript and

14       make any necessary corrections on the errata pages included

15       below, notating the page and line number of the corrections.

16       The witness should then sign and date the errata and penalty

17       of perjury pages and return the completed pages to all

18       appearing counsel within the period of time determined at

19       the deposition or provided by the Code of Civil Procedure.

20   __ Waiving the CA Code of Civil Procedure per Stipulation of

21       Counsel - Original transcript to be released for signature

22       as determined at the deposition.

23   __ Signature Waived - Reading & Signature was waived at the

24       time of the deposition.

25
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1   xx Federal R&S Requested (FRCP 30(e)(1)(B)) – Locked .PDF

2   Transcript - The witness should review the transcript and

3   make any necessary corrections on the errata pages included

4   below, notating the page and line number of the corrections.

5   The witness should then sign and date the errata and penalty

6   of perjury pages and return the completed pages to all

7   appearing counsel within the period of time determined at

8   the deposition or provided by the Federal Rules.

9   __ Federal R&S Not Requested - Reading & Signature was not

10   requested before the completion of the deposition.

11

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1   I, GEORGIOS ZERVAS, Ph.D., do hereby

2   declare under penalty of perjury that I have read

3   the foregoing transcript; that I have made any

4   corrections as appear noted, in ink, initialed by

5   me, or attached hereto; that my testimony as

6   contained herein, as corrected, is true and correct.

7   EXECUTED this _____ day of _____,

8   20_____, at _____, _____.

9   (City)   (State)

10

11

12

13

14

15   _____

16   GEORGIOS ZERVAS, Ph.D.

17   VOLUME I

18

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1    RE: BROWN vs. GOOGLE LLC

2    GEORGIOS ZERVAS, Ph.D. (JOB NO. 5344594)

3

4                E R R A T A   S H E E T

5    PAGE_____ LINE_____ CHANGE_____

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20   PAGE_____ LINE_____ CHANGE_____

21   _____

22   REASON_____

23

24   _____   _____

25   GEORGIOS ZERVAS, Ph.D.                Date
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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the
deponent or a party before the deposition is
completed, the deponent must be allowed 30 days
after being notified by the officer that the
transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to
sign a statement listing the changes and the
reasons for making them.

(2) Changes Indicated in the Officer's Certificate.
The officer must note in the certificate prescribed
by Rule 30(f)(1) whether a review was requested
and, if so, must attach any changes the deponent
makes during the 30-day period.

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ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
THE ABOVE RULES ARE CURRENT AS OF APRIL 1,
2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES
OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

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transcript of the colloquies, questions and answers
as submitted by the court reporter. Veritext Legal
Solutions further represents that the attached
exhibits, if any, are true, correct and complete
documents as submitted by the court reporter and/or
attorneys in relation to this deposition and that
the documents were processed in accordance with
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